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THE

PRIMARY ARITHMETIC

FOR

YOUNG LEARNERS.

BY

J. RHOADS, M. D.,

PRINCIPAL OF THE [illegible] GRAMMAR SCHOOL, PHILADELPHIA.

NEW AND REVISED AND ONLY AUTHORIZED EDITION.

PHILADELPHIA:
SOWER & BARNES, PUBLISHERS,
No. 37 NORTH THIRD STREET.
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PREFACE.

Every Teacher must be aware of the difficulty of maintaining order among young children when in school, in consequence of the deficiency in the means of furnishing them with the *varied* employment which they require. This little work is intended to furnish a remedy for the difficulty, by giving an opportunity to the teacher, without deranging the regular classes of the school, of directing the primary classes to appropriate questions in the first rules of arithmetic, whenever their spelling or reading lessons become tedious to them. And for this purpose the examples are made *very numerous* under each rule. But few explanations have been introduced, as they would have increased the size and cost of the work; and the classes for which it is designed can understand the processes only from the oral instructions of the teacher.

Of the amount of funds to be saved by the use of this work, we need say nothing, as all directors and teachers know that children usually wear out a book on Arithmetic, containing Compound Numbers, Fractions, &c., &c., (nine-tenths of the pages of which they have not opened,) before they have obtained a knowledge of the fundamental rules.

N. B.—A Key, containing the answers to the examples, accompanies the work.

Entered, according to Act of Congress, in the year 1844, by Griffith & Simon, in the Clerk's Office of the District Court, for the Eastern District of Pennsylvania.

ROBB, PILE & M'ELROY, PRS.

ORAL ARITHMETIC.

A PERSON who has witnessed the sparkling eye and animated countenance of a child, exclaiming "I can count a hundred," will appreciate the importance of the following exercises in *oral Arithmetic.*

They should be given to the pupils, to be learned at home, by the assistance of their parents; and should be recited in *class,* but not in *chorus.*

We will suppose the example to be: To add twos till you have counted 100; one pupil should say, "2 and 2 are 4;" another, "4 and 2 are 6;" another, "6 and 2 are 8;" &c. &c.

Great care will be requisite that they do not carelessly recite in this *incorrect* manner: one saying, "2 and 2 are 4;" another, "and 2 are 6;" another, "and 2 are 8;" &c. &c.

ORAL ADDITION.

1. BEGIN at 1 and count 100 by adding ones.

Thus: one and 1 are 2; two and 1 are 3; three and 1 are 4; &c.

2. Begin at 1 and count more than 100 by adding twos.

Thus: one and 2 are 3; three and 2 are 5; 5 and 2 are 7; &c. &c.

3. Begin at 2 and count more than 100 by adding twos.

Thus: 2 and 2 are 4; 4 and 2 are six; 6 and 2 are 8; &c. &c.

4. Begin at 1 and count more than 100 by adding 3's.
5. Begin at 2 and count more than 100 by adding 3's.
6. Begin at 3 and count more than 100 by adding 3's.
7. Begin at 1 and count more than 100 by adding 4's.

In this manner many useful examples may be made; and by altering the unit to a denominate number, when these become irksome, the interest of the children in the exercise will be renewed. Thus: John finds one apple and then one more; how many apples has he? and then 1 more, &c.

ORAL SUBTRACTION.

1. From 100 subtract 1 till nothing remains.

Thus: 1 from 100 leaves 99; 1 from 99 leaves 98; &c.

2. From 100 subtract 2 till nothing remains.
3. From 100 subtract 3 till nothing remains.
4. From 100 subtract 4 till nothing remains.

The numbers in these examples may readily be converted into denominate, by saying: a boy has 100 marbles and loses 1. How many has he left? he loses another, &c. &c.

ORAL MULTIPLICATION.

1. How many is 1 time 1, 2, 3, 4, &c. &c.

Thus: 1 time 1 is 1; 1 time 2 is 2; &c. &c.

2. How many is 2 times 1, 2, 3, 4, &c. &c.

Thus: 2 times 1 are 2; 2 times 2 are 4; &c.

3. How many is 3 times 1, 2, 3, 4, &c. &c.

4. When oranges cost 2 cents a-piece, how many cents would one orange cost? 2 oranges? 3 oranges? &c.

When oranges cost 2 cents a-piece, one orange would cost 2 cents; 2 oranges would cost 2 times as much as 1 orange, or 2 times 2 cents, which is 4 cents; 3 oranges would cost 3 times as much as 1 orange, or 3 times 2 cents, which is 6 cents; &c.

5. When oranges cost 3 cents a-piece, how many cents would 1 orange cost? 2 oranges? 3 oranges? &c. &c.

ORAL DIVISION.

1. How many ones in 1, 2, 3, 4, 5, 6, &c. &c.

Thus: 1 into 1, 1 time; 1 into 2, 2 times; &c. &c.

2. How many times is 2 contained in 1, 2, 3, 4, 5, 6, 7, &c., and how many over?

Thus: 2 into 1, 0 times, and 1 over; 2 into 2, 1 time; 2 into 3, 1 time and 1 over; &c. &c.

3. How many times is 3 contained in 1, 2, 3, 4, 5, 6, &c., and how many over? is 4? is 5? &c.

4. If 1 knife cost 2 cents, how many knives would 2 cents buy? 4 cents? 6 cents? &c. &c.

If 1 knife cost 2 cents, 2 cents would buy 1 knife. If 1 knife cost 2 cents, 4 cents would buy as many knives as 2 cents is contained times in 4 cents; 2 cents is contained in 4 cents 2 times, therefore 4 cents would buy 2 times 1 knife, which is 2 knives; &c.

5. If 1 knife cost 3 cents, how many knives would 3 cents buy? 6 cents? 9 cents? 12 cents? &c. &c.

ARITHMETIC.

ARITHMETIC is the science which treats of numbers.

A NUMBER is the expression for one or more things of the same kind, and is written in Arithmetic by certain characters called figures.

A FIGURE is a character denoting a whole number less than ten.

There are ten figures; they are,

0,	1,	2,	3,	4,	5,	6,	7,	8,	9,
Naught,	one,	two,	three,	four,	five,	six,	seven,	eight,	nine.

The CIPHER or NAUGHT, 0, is used to denote the absence of a thing. As, if we wish to express by figures that there are no apples in a basket, we write, the number of apples in the basket is 0. The nine other figures are called SIGNIFICANT FIGURES or DIGITS.

1 expresses a single thing, or a unit of a number.
2 " two things of the same kind, or 2 units, &c.

The greatest number that can be expressed by a single figure is nine.

To express any number greater than nine, the figures must be combined, or more than one written; as

10,	11,	12,	13,	14,	&c.
Ten,	eleven,	twelve,	thirteen,	fourteen.	

The scholar who wishes to learn must be very careful to remember,

1. That the unit of a number is one of the equal things which the number expresses. Thus, if the number is 5 marbles, 1 marble is the unit; if 15 pounds of coffee, 1 pound of coffee is the unit.

2. That the first figure on the right hand is in the unit's place, and expresses as many single things as the figure signifies.

3. That the next figure to the left of the unit's place is in the ten's place, and expresses ten times as many single things as it would express if it stood in the unit's place.

4. That the third figure from the right hand is said to be in the place of hundreds, and expresses one hundred times as many single things as it would express if it stood in the unit's place, or ten times as many as if it stood in the ten's place.

5. That the fourth figure from the right hand is said to be in the place of thousands, and expresses one thousand times as many single things as it would express if it stood in the unit's place, one hundred times as many as if it stood in the ten's place, or ten times as many as if it stood in the hundred's place.

6. That the same figures has different values according to the place in which it stands; its value is increased ten times for every place it is removed to the left.

7. That the 0 or cipher, which of itself signifies nothing, is so important in Arithmetic, because it retains other figures in their proper places, that Arithmetic was formerly called the ART OF CIPHERING.

QUESTIONS.—1. What is Arithmetic? 2. What is a number? 3. How are numbers written? 4. What is a figure? 5. How many figures are there? 6. Name them and spell their names. 7. What is the greatest number that can be expressed by a single figure? 8. How do you express any number greater than 9? 9. Spell ten, eleven, twelve, thirteen, &c.? 10. What is the unit of a number? 11. What is the unit's place? 12. How many single things does a figure in the unit's place express? 13. Which is the ten's place? 14. Which is the place of the hundreds? 15. What does the third figure from the right hand express? 16. What does the fourth figure from the right hand express? 17. Has the same figure different values? 18. On what does this difference of value of a figure depend? 19. How much is the value of a figure increased for every place it is removed to the left of the unit's place? 20. What does the 0 or cipher signify? 21. Why is the 0 or cipher important in Arithmetic? 22. What was Arithmetic formerly called? 23. Spell Arithmetic, numbers, figures, &c.

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40. There is a school in which twenty-two children only read, thirty-three cipher, and twenty-one are learning A, B, C. How many children are in the school?

41. John, Andrew, and James go to Sunday-school; John recites sixteen verses from the Bible, Andrew eleven, and James ten. How many verses do they recite?

42. The mistress kept in school for talking, twelve little girls, fifteen minutes after the school was dismissed, and thirteen little boys for not attending to their lessons. How many children were detained?

43. Jane, Mary, and Eliza went into the country on May-day; Jane procured fifteen flowers, Mary twelve, Eliza ten; when they returned home, they gave them to their mother. How many flowers did they give to their mother?

44. In a school there are five classes. In the 1st class 12 scholars, 2d class 10, 3d class 13, 4th class 11, and in the 5th class 21. How many scholars belong to the school?

45. Jacob has 12 cents, Charles 14, James 20, and John 33. How many have they in all?

46. Charles went out to gather chestnuts: under one tree he found 10, under another 21, and under a third tree he found 42. How many chestnuts did Charles find?

47. A small boy said that he had 2 tops, 12 marbles, 13 cents, and 120 ground nuts, and that there were as many scholars in the school he went to, as he had tops, marbles, cents, and ground nuts. How many scholars were in the school?

48. John, Charles, and James were ciphering. John was careful, and all his sums were right but 2; Charles and James were careless, and each had 10 wrong. How many sums did these 3 boys have wrong?

49. A father told his children that his age was 10 years more than the sum of their ages. John was 15 years of age, Mary was 13, and Ann was 11. What was the age of their father?

50. 12+10+21= 51. 1203+2040+2156=

SECTION II.

(1.)
652
743
854
669
2918

We first add the figures in the column of units: thus, 9 and 4 are 13, and 3 are 16, and 2 are 18. The sum of the figures in the column being greater than 9, we write down the 8 units and carry the 1 ten to the bottom figure of the next column. In adding the tens in the same way we find the sum of the one we have carried to the tens, and the figures in the tens to be 21; we write the 1 only, and carry the 2 to the column of hundreds. We then add the 2 we have carried to the column of hundreds and find their sum to be 29; and as this is the last column of figures we set down the whole sum. And we find the answer to be 2918. (Note.) Let every pupil be careful to place units under units, and carry the right number of tens.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
22	42	21	33	88	12
31	25	34	44	99	83
19	79	79	55	11	77

(8.)	(9.)	(10.)	(11.)	(12.)	(13.)
12	24	47	55	90	111
36	30	59	88	90	222
85	50	92	99	90	444

(14.)	(15.)	(16.)	(17.)
989	999	344	275
657	888	224	892
854	777	438	979
963	666	509	786
605	555	677	398

18. Add together 22, 13, 12, 16, 45, and 99.
19. Add together 23, 22, 24, 13, 37, and 86.
20. Add together 46, 34, 15, 23, 78, and 32.
21. Add together 76, 87, 44, 59, 63, and 44.
22. Add together 86, 97, 83, 74, 68, and 89.
23. Add together 92, 70, 48, 53, 87, and 64.
24. Add together 845, 544, 328, 896, and 792.
25. What is the sum of 643, 444, 897, and 905?

26. The month of January in it has 31 days, February 28, March 31, April 30, May 31, June 30, July 31, August 31, September 30, October 31, November 30, and December 31. How many days in a year?

27. If John had 15 apples, Samuel 25, Edward 40, and William 32, and they were to place them in one basket, how many apples would there be in the basket?

28. If your father were to give you 75 cents, your mother 55 cents, your aunt 45 cents, and your sister 17 cents; how many cents would you have?

29. William bought 10 marbles one day, 29 the next day, and the third day he bought 95 marbles. How many marbles did William buy in three days?

30. What is the sum of 37, 45, 56, 98, and 97?

31. In one pile of wood there are forty-five sticks, in another pile sixty-four sticks, in another pile eighty-seven sticks, and in another pile ninety-seven sticks. How many sticks of wood?

32. If you ride fifty miles on Monday, forty-five miles on Tuesday, rest on Wednesday, ride thirty miles on Thursday, and fifteen miles on Friday, how far do you ride?

33. I am a grocer and have 25 pounds of butter in my store, and buy 37 pounds of one farmer, 49 pounds of another, 98 pounds of a third, and receive 44 pounds in payment of a debt. How many pounds do I then have?

34. Sheep do not thrive when kept in large flocks; so a farmer put 65 of his sheep in one pasture field, 84 in another field, 99 in a third field, and 13 in a small lot near his house. How many sheep had the farmer?

35. If you were to buy a yoke of oxen for seventy-five dollars, a cart for fifty dollars, three cows for eighty-nine dollars, and a plough and harness for twenty-five dollars, How much must you pay?

36. Charles paid 25 cts. for paper, 58 cts. for a penknife, 79 cts. for steel pens, 62 cts. for a pair of gloves, and had 16 cts. left. How many cents had Charles at first?

37. A carter hauled seven loads of wheat. In the 1st

load there were 32 bushels, 2d 29, 3d 19, 4th 22, 5th 30, 6th 42, 7th 27. What number of bushels were hauled?

38. Tell me the sum of twenty-five, thirty-four, sixty-seven, ninety-nine, and eighty-nine?

39. The numbers six hundred and nine, seven hundred and nineteen, and eight hundred and fourteen, added together, make how many?

40. A merchant owes A. 695 dollars, B. 547 dollars, C. 356 dollars, and D. 824 dollars. How many dollars does the merchant owe?

41. A man borrowed a sum of money, and paid in part 762 dollars, and afterwards paid the balance which was 989 dollars. How much did he borrow?

42. A lady furnishing a house bought furniture for her parlors costing 397 dollars, for one chamber 125 dollars, for another 117 dollars, and for the remaining chambers and kitchen costing 268 dollars. What was the value of the furniture in her house?

SECTION III.

NOTE.—You will avoid many difficulties in writing the numbers in this section, "units under units, and tens under tens," &c., if you will write the first number as you have been accustomed to do; and when you begin to write the next number under it, write the units figure of the number first, and then the tens, hundreds, &c.

1. Add together 654, 17, and 2398.

```
 654
  17
2398
————
```

We first write the 654, then write the units' figure (7) of the next number (17) under the units' figure (4) of the preceding number (654); then write the tens' figure (1) of the 17 under the tens' figure (5) of the 654. The next number to be written is 2398; write the units' figure (8) under the units' figure (7) of the number above it; then write the tens' figure (9) under the tens' figure (1) of the number above it; then write the hundreds' figure (3) to the left of the tens' figure (9), and it will fall under the hundreds' in any line above it, if you have made your figures of a similar size and with an equal space between them; then write the thousand's figure (2) to the left of the hundreds' figure (3). Then add as usual.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
9	10018	250	690704	249657	659094
70	76	8	8090	994396	78455
1000	8407	1004	29489	20	9
989	6	999	6007	136	776985
5	909	87	945	597298	25
787	10804	142	835099	7009	969677

8. What is the sum of 9, 70, 89, 455, 897, and 1005?

9. What is the sum of 9, 1000, 84, 4068, and 5?

10. Add together the numbers 7907, 809, 10024, and 78.

11. Add together the numbers 109, 76567, 1342, and 84.

12. What is the sum of 6, 45, 197, 8045, 99084, 1804750, 899999742, 8008, and 211?

13. A man bought a barrel of flour for 9 dollars, a barrel of molasses for 26 dollars, and a barrel of rum for 36 dollars. How much did he pay for all the articles?

14. You expend for a gold watch 125 dollars, for a chaise 365 dollars, for a new suit of clothes 89, and give 163 dollars for a horse. How much money have you parted with?

15. If my neighbour should borrow of me, at one time 656 dollars, at another 55 dollars, at another 3290 dollars, and again should borrow 3290 dollars. How much would he borrow?

16. A merchant owes 617 dollars to the firm of Johnson and Warren, 15678 dollars to the Bank of North America, 7982 dollars to Fredgold and Fairchild. How much does he owe?

17. Gen. Washington was born Anno Domini 1732, and lived 67 years. In what year did he die?

18. John was born in 1806. What year of our Lord was it when he was 21 years of age?

19. From the creation of the world to the flood was 1656 years; from the flood to the building of Solomon's

Temple 1336 years; from that time to the birth of our Saviour 1008 years. In what year of the world was our Saviour born?

20. An army consists of 4000 infantry, 4006 cavalry, 5093 artillerymen, 1224 riflemen, 1400 pioneers, and 300 miners. What is the number of men in the army?

21. A bookseller sold 6007 primers, 2075 spelling-books, 80709 reading-books, 943 copy-books, 1705 arithmetics. How many books did he sell?

22. A merchant owes a man in Boston 976 dollars, one in New York 473 dollars, one in Portland 630 dollars, one in New Orleans 1005 dollars, and a man in Baltimore 70 dollars. What is the amount of his debts?

23. A merchant owns a sloop worth 1000 dollars, a schooner worth 5298 dollars, a brig worth 8209 dollars, and a ship worth 13333 dollars. What is the value of all these vessels?

24. According to the census of 1840, Maine contained 501793 inhabitants, New Hampshire 284574 inhabitants, Massachusetts 737699 inhabitants, Rhode Island 108830 inhabitants, Connecticut 309978 inhabitants, and Vermont 291948 inhabitants. These are called the Eastern States. How many inhabitants did the Eastern States contain?

25. The Middle States are, New York, Pennsylvania, New Jersey, and Delaware. The population of New Jersey in 1840 was 373306, of Pennsylvania 1724033, of New York 2428921, of Delaware 78085. What was the population of the Middle States in 1840?

26. The population of New York city in 1840 was 312710, of Philadelphia co. 258037, of Boston 93383, of New Orleans 102193, of Baltimore 102313. How many inhabitants were there in the five cities?

27. What is the sum of one hundred and one thousand, twenty thousand and twenty, and three hundred and ten thousand and thirty-one?

28. What is the amount of six hundred and one million six hundred and seven, added to nine hundred and ninety million, and ninety thousand and ninety-nine?

SUBTRACTION.

Subtraction is the operation by which the difference of two numbers is found.

The **difference** of two numbers is the number by which the greater exceeds the less, and is called the **remainder.**

The greater number is called the **minuend.**

The smaller number is called the **subtrahend.**

The sign of subtraction, —, is called minus or less, and shows that the one on the right is to be subtracted from the one on the left of it. Thus, 5 — 3 is 2.

Rule 1.—Write the less number under the greater, placing units under units, tens under tens, &c., and draw a line under them. Begin on the right hand, and if the figure in the lower line is less than the figure above it, take the lower figure from the upper and set the remainder below it.

2. When the figure in the lower line is greater than the one above it, add ten to the upper figure and take the lower figure from the sum; set down what remains and add one to the next lower figure.

3. Continue to subtract in this manner, and the row of figures thus found will express the difference sought.

Note.—When the figure in the lower line is greater than the one above it, we add ten to the upper figure; this is called *borrowing ten;* and as this ten is equal to one of the next column, we consider the next upper figure to be 1 less than it is, or what is often more convenient, add 1 to the next lower figure; this is called *paying.*

Proof.—Add the remainder and the subtrahend together, and if the sum is equal to the minuend, the work is right.

Questions.—1. Spell subtraction. 2. What is subtraction? 3. What is the difference and what is it called? 4. Spell difference. 5. What is the greater number called? 6. What is the smaller number called? 7. Write the sign of subtraction on the black board. 8. Which number is the minuend? 9. Which number is the subtrahend? 10. What is the sign of subtraction? 11. When placed between numbers, what does it show? 12. How do you set numbers for subtraction? 13. Where do you begin to subtract? 14. How do you subtract when the figure in the lower line is less than the figure above it? 15. How do you subtract when the figure in the lower line is greater than the figure above it? 16. What is adding 10 to the figure in the upper line called? 17. How do you prove subtraction?

SUBTRACTION TABLE.

1 from 1 leaves 0	2 from 2 leaves 0	3 from 3 leaves 0
1 from 2 leaves 1	2 from 3 leaves 1	3 from 4 leaves 1
1 from 3 leaves 2	2 from 4 leaves 2	3 from 5 leaves 2
1 from 4 leaves 3	2 from 5 leaves 3	3 from 6 leaves 3
1 from 5 leaves 4	2 from 6 leaves 4	3 from 7 leaves 4
1 from 6 leaves 5	2 from 7 leaves 5	3 from 8 leaves 5
1 from 7 leaves 6	2 from 8 leaves 6	3 from 9 leaves 6
1 from 8 leaves 7	2 from 9 leaves 7	3 from 10 leaves 7
1 from 9 leaves 8	2 from 10 leaves 8	3 from 11 leaves 8
1 from 10 leaves 9	2 from 11 leaves 9	3 from 12 leaves 9
1 from 11 leaves 10	2 from 12 leaves 10	3 from 13 leaves 10
4 from 4 leaves 0	5 from 5 leaves 0	6 from 6 leaves 0
4 from 5 leaves 1	5 from 6 leaves 1	6 from 7 leaves 1
4 from 6 leaves 2	5 from 7 leaves 2	6 from 8 leaves 2
4 from 7 leaves 3	5 from 8 leaves 3	6 from 9 leaves 3
4 from 8 leaves 4	5 from 9 leaves 4	6 from 10 leaves 4
4 from 9 leaves 5	5 from 10 leaves 5	6 from 11 leaves 5
4 from 10 leaves 6	5 from 11 leaves 6	6 from 12 leaves 6
4 from 11 leaves 7	5 from 12 leaves 7	6 from 13 leaves 7
4 from 12 leaves 8	5 from 13 leaves 8	6 from 14 leaves 8
4 from 13 leaves 9	5 from 14 leaves 9	6 from 15 leaves 9
4 from 14 leaves 10	5 from 15 leaves 10	6 from 16 leaves 10
7 from 7 leaves 0	8 from 8 leaves 0	9 from 9 leaves 0
7 from 8 leaves 1	8 from 9 leaves 1	9 from 10 leaves 1
7 from 9 leaves 2	8 from 10 leaves 2	9 from 11 leaves 2
7 from 10 leaves 3	8 from 11 leaves 3	9 from 12 leaves 3
7 from 11 leaves 4	8 from 12 leaves 4	9 from 13 leaves 4
7 from 12 leaves 5	8 from 13 leaves 5	9 from 14 leaves 5
7 from 13 leaves 6	8 from 14 leaves 6	9 from 15 leaves 6
7 from 14 leaves 7	8 from 15 leaves 7	9 from 16 leaves 7
7 from 15 leaves 8	8 from 16 leaves 8	9 from 17 leaves 8
7 from 16 leaves 9	8 from 17 leaves 9	9 from 18 leaves 9
7 from 17 leaves 10	8 from 18 leaves 10	9 from 19 leaves 10

SECTION I.

1. Subtract 431 from 789: that is, take 431 from 789 or tell the difference between the numbers 431 and 789.

Hund.	Tens.	Units.	
7	8	9	Minuend.
4	3	1	Subtrahend.
3	5	8	Remainder or difference.

We first "write the less number under the greater, so that units may fall under units," &c. We begin on the right-hand, and as the figure (1) in the lower line is less than the figure (9) above it, we say, 1 unit from 9 units leaves 8 units; set down the 8 units under the 1 unit. Proceeding to the next left-hand column, we say, 3 tens from 8 tens leave 5 tens; set down the 5 tens under the 3 tens; then say, 4 hundreds from 7 hundreds leaves 3 hundreds; and set down the 3 hundreds under the 4 hundreds: this row of figures 358 expresses the difference between 431 and 789.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)	(8.)	(9.)
24	26	28	54	65	76	72	93
12	13	14	32	23	24	51	81

(10.)	(11.)	(12.)	(13.)	(14.)	(15.)	(16.)	(17.)
95	77	78	82	88	69	55	66
72	45	56	60	27	52	31	34

(18.)	(19.)	(20.)	(21.)	(22.)	(23.)
789	789	859	765	853	784
245	345	543	345	241	353

(24.)	(25.)	(26.)	(27.)	(28.)	(29.)
6524	9769	7809	6407	8365	6479
2501	2462	7207	6103	5132	2146

30. Subtract seven hundred and forty-five from nine hundred and eighty-seven.

31. Take six hundred from eight hundred and sixty-seven.

32. What is the difference between sixty-eight thousand seven hundred and eighty-five, and forty-five thousand four hundred and forty?

33. If you subtract seventeen thousand eight hundred

and sixty-four, from ninety thousand nine hundred and ninety-nine, how many will be left?

34. If six thousand six hundred and sixty-six is taken from nine thousand seven hundred and ninety-eight; how many will remain?

35. Eight hundred and ninety-six thousand eight hundred and ninety-seven, is the number from which you are to subtract seven hundred and sixty-four thousand four hundred and thirty-four.

36. How much greater is six hundred and seventy-nine thousand eight hundred and ninety-three, than four hundred and thirty-two thousand four hundred and twenty-one?

SECTION II.

1. Subtract 469 from 745.

1st SOLUTION.	2d SOLUTION.		
	Hund.	Tens.	Units.
745	6	13	15
469	4	6	9
276	2	7	6

We begin on the right-hand, and being unable to subtract 9 units from 5 units, we borrow 1 of the 4 tens, and add it to the 5 units, making 15 units, (see second solution,) and taking the 9 units from the 15, we have 6 units left, which we write down under the 9. We then, (having borrowed 1 of the 4 tens,) consider the 4 tens as being one less than it is, or 3 tens; and as we cannot take 6 tens from 3 tens, we borrow 1 of the 7 hundreds and add it to the 3 tens, making 13 tens; (see second solution:) from the 13 tens we then take the 6 tens, leaving 7 tens, which we write down under the 6; then we consider the 7 hundreds to be 1 less than it is, or 6 hundreds, and say, 4 hundreds from 6 hundreds leaves 2 hundreds, which we put down under the 4. And the row of figures which expresses the difference between the two numbers 745 and 469 is 276.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)	(8.)	(9.)
64	75	85	30	57	94	84	68
18	29	67	19	48	48	47	25

(10.)	(11.)	(12.)	(13.)	(14.)	(15.)	(16.)	(17.)
62	61	51	40	50	70	80	804
26	18	28	12	12	14	15	213

(18.)	(19.)	(20.)	(21.)	(22.)	(23.)	(24.)
800	700	600	555	666	252	627
1	2	3	249	367	153	229

(25.)	(26.)	(27.)	(28.)	(29.)	(30.)	(31.)
545	346	704	634	543	816	905
241	241	206	238	405	649	714

32. Take 103 from 200. 33. Take 208 from 304. 34. Take 309 from 405. 35. Subtract 407 from 508. 36. Subtract 508 from 611. 37. Subtract 611 from 831. 38. Take 914 from 934. 39. Subtract 67890523 from 89045726. 40. Subtract 160789005 from 260771006. 41. Subtract 785436907 from 1785436906. 42. Subtract 670084596 from 7768754904. 43. Subtract 854321079 from 985467890. 44. Subtract 234567896 from 1234567890. 45. Subtract 670800654 from 700054000. 46. Subtract 502007948 from 602006755.

SECTION III.

APPLICATION OF SUBTRACTION.

1. The stage route from Philadelphia to Cape May is 81 miles, the steamboat route is 102 miles. How much farther do you travel in going by steamboat to Cape May than by stage?

2. If James having seventy-five marbles was to lose nineteen; how many marbles would he have left?

3. John performed one hundred and fifty examples in Arithmetic in one week; they were all correct but seventeen. How many were correct?

4. In one day Jacob can do seventy-two sums, and Sarah can do fifty-five in the same time. How many more must Sarah do to equal Jacob?

5. Ann has one hundred and seventy-five cents, she intends to buy a book which shall cost seventy-eight cents. How many cents will she have left?

6. The mariner's compass was invented in 1302, and merica was discovered by Columbus in 1492. How

many years after the invention of the mariner's compass was America discovered?

7. A lady paid seventy-five dollars for a parlor carpet. How many dollars has she remaining, if she had one hundred and seventy-three dollars before she purchased the carpet?

8. James has one hundred and forty cents; Albert has seven hundred and four cents. How many more cents has Albert than James?

9. The falls of Niagara river are 150 feet high; the falls of the Genessee, at Rochester, are 96 feet. How many feet more do the waters of the Niagara river fall than those of the Genessee?

10. John was born in the year eighteen hundred and fifteen, and James in the year eighteen hundred and twenty-five. What is the difference of their ages?

11. A man was born in 1785. What was his age in 1843?

12. Suppose I lend a man 1768 dollars, and he dies, owing me 879 dollars. How much had he paid me?

13. America was discovered by Columbus in the year 1492. What number of years had elapsed in 1844, since its discovery?

14. George Washington was born in 1732, and died in 1799. What was his age at his death?

15. The Declaration of Independence was published July 4th, 1776. How many years before July 4th, 1844?

16. General Washington died in the year 1799, aged 67 years. In what year was he born?

17. A man who had 11375 dollars in his possession, paid his debts, amounting to 3287 dollars. How much had he left?

18. A brickmaker had a kiln containing 68000 bricks. How many remained after he had sold and delivered 27908?

19. What is the difference between 400 and 144?

20. There are two numbers, the one 840, the other 782. How much is one number greater than the other?

21. A boy who had a thousand nuts, lost 92. How many had he left?

22. Having two thousand and ninety dollars in a strong iron box, I lent seven hundred and nine dollars of it. How many dollars remained in the chest?

23. A farmer who had 4672 bushels of grain, sold 2781 bushels. How many bushels had he left?

24. Mr. A. has 584 dollars, Mr. B. has 672 dollars. How much more has Mr. B. than Mr. A.?

25. How many years will it have been in 1846, since the Pilgrims landed at Plymouth, in 1620?

26. I borrowed 763 dollars, of which I have paid 367 dollars. How much remains unpaid?

27. I borrowed 763 dollars and still owe 396. How much have I paid?

28. Gunpowder was invented in 1302, and the first newspaper was printed at Paris, in France, in 1631. How many years was the invention of gunpowder prior to the printing of the newspaper?

29. In a certain granary there were 1000 bushels, there are 828 bushels in it now. How many bushels have been taken out?

30. I bought 2391 bushels of salt, and have only 398 bushels left. How much have I sold?

31. By the census of 1840, the white population of the United States was 14195208, and the number of blacks was 2873458. How many more whites were there than blacks in the United States?

32. What would be a man's age in 1844, if he was born in 1806?

33. A man dies worth 1200 dollars; he leaves 504 dollars to his daughter, and the remainder to his son. What is the son's portion?

34. A tree seventy-five feet high was broken off by the wind, and the part that fell was thirty-nine feet long. How high was the stump which was left standing?

35. A grocer sold a quantity of butter for 103 dollars, and made 27 dollars profit. How much did it cost him?

36. A man sold a ship for 12250 dollars, which cost him 15235 dollars. Did he gain or lose, and how much?

37. If you buy a horse and chaise for 235 dollars, and sell the chaise for 147 dollars, how much will the horse have cost you?

38. What is the difference between seven thousand seven hundred and seven, and seventy thousand and seven?

39. There are two schools in a village, one containing seventy-five girls, and the other eighty-five boys; the girls being more attentive than the boys, perform nine thousand examples in Arithmetic in a week: the boys only perform six thousand and six. How many more examples in Arithmetic do the girls perform in a week than the boys?

40. In 1830 the population of the United States was 12866020, in 1840 it was 17068666. What was the increase in the 10 years?

41. A storekeeper in the country sent a man to Philadelphia with seventy thousand eggs, the man was very careful, and only broke six eggs. How many whole eggs were left?

42. Boys and girls are usually in school in the forenoon three hours, or 180 minutes; if a boy should be idle 35 minutes and industriously engaged the remainder of the forenoon, how many minutes would he study?

43. From Philadelphia to Pittsburgh by the Columbia rail-road and stage route, it is 276 miles; the Philadelphia and Columbia rail-road is 82 miles in length. How far do we travel on this route by stage?

44. In a mile there are sixty-three thousand and three hundred and sixty inches; in a foot there are twelve inches. How many more inches are there in a mile than in a foot?

45. In one dime there are ten cents; in one hundred dollars there are ten thousand cents. How many cents must a boy who has a dime get before he possesses a hundred dollars?

46. If five be subtracted from five thousand, how many will be left?

47. Diminish seventy-seven thousand and seventy-seven by subtracting eight hundred and eight from it.

MULTIPLICATION.

MULTIPLICATION is the operation by which one number is repeated as many times as there are units in another number. It may be said to be a short method of *Addition.* There are three numbers in every multiplication, viz., *multiplicand, multiplier,* and *product.*

The number to be multiplied is called the MULTIPLICAND. The number by which we multiply is called the MULTIPLIER. The result of multiplication is called the PRODUCT. The multiplier and multiplicand are called FACTORS of the product.

A COMPOSITE number is one which can be produced by multiplying two or more whole numbers together. The *order* in which the factors are multiplied does not alter the product. If you multiply 7 by 6, the result is the same as if you multiply 6 by 7.

The sign × is called the sign of multiplication; and it shows that the numbers between which it is placed are to be multiplied together: thus, $4 \times 3 = 12$.

QUESTIONS.—1. What is multiplication? 2. Spell multiplication. 3. Of what is multiplication a short method? 4. How many numbers in every multiplication? 5. What are they? 6. What is the multiplicand? 7. Spell multiplicand. 8. What is the multiplier? 9. Spell multiplier. 10. What is the product? 11. Spell product. 12. What are factors? 13. What is a composite number? 14. If you were to change multiplier into multiplicand, and multiplicand into multiplier, would the product be altered? 15. Make the sign of multiplication on the black board. 16. Can you obtain the product of two numbers by Addition? 17. When you say 7 times 6 are 42, which is the multiplier? 18. Why? 19. Which is the multiplicand? 20. Why? 21. Which is the product? 22. Why? Let every child learn the multiplication table perfectly.

MULTIPLICATION TABLE.

1	time	0	is	0	2	times	0	are	0	3	times	0	are	0
1	time	1	is	1	2	times	1	are	2	3	times	1	are	3
1	time	2	is	2	2	times	2	are	4	3	times	2	are	6
1	time	3	is	3	2	times	3	are	6	3	times	3	are	9
1	time	4	is	4	2	times	4	are	8	3	times	4	are	12
1	time	5	is	5	2	times	5	are	10	3	times	5	are	15
1	time	6	is	6	2	times	6	are	12	3	times	6	are	18
1	time	7	is	7	2	times	7	are	14	3	times	7	are	21
1	time	8	is	8	2	times	8	are	16	3	times	8	are	24
1	time	9	is	9	2	times	9	are	18	3	times	9	are	27
1	time	10	is	10	2	times	10	are	20	3	times	10	are	30
1	time	11	is	11	2	times	11	are	22	3	times	11	are	33
1	time	12	is	12	2	times	12	are	24	3	times	12	are	36
4	times	0	are	0	5	times	0	are	0	6	times	0	are	0
4	times	1	are	4	5	times	1	are	5	6	times	1	are	6
4	times	2	are	8	5	times	2	are	10	6	times	2	are	12
4	times	3	are	12	5	times	3	are	15	6	times	3	are	18
4	times	4	are	16	5	times	4	are	20	6	times	4	are	24
4	times	5	are	20	5	times	5	are	25	6	times	5	are	30
4	times	6	are	24	5	times	6	are	30	6	times	6	are	36
4	times	7	are	28	5	times	7	are	35	6	times	7	are	42
4	times	8	are	32	5	times	8	are	40	6	times	8	are	48
4	times	9	are	36	5	times	9	are	45	6	times	9	are	54
4	times	10	are	40	5	times	10	are	50	6	times	10	are	60
4	times	11	are	44	5	times	11	are	55	6	times	11	are	66
4	times	12	are	48	5	times	12	are	60	6	times	12	are	72
7	times	0	are	0	8	times	0	are	0	9	times	0	are	0
7	times	1	are	7	8	times	1	are	8	9	times	1	are	9
7	times	2	are	14	8	times	2	are	16	9	times	2	are	18
7	times	3	are	21	8	times	3	are	24	9	times	3	are	27
7	times	4	are	28	8	times	4	are	32	9	times	4	are	36
7	times	5	are	35	8	times	5	are	40	9	times	5	are	45
7	times	6	are	42	8	times	6	are	48	9	times	6	are	54
7	times	7	are	49	8	times	7	are	56	9	times	7	are	63
7	times	8	are	56	8	times	8	are	64	9	times	8	are	72
7	times	9	are	63	8	times	9	are	72	9	times	9	are	81
7	times	10	are	70	8	times	10	are	80	9	times	10	are	90
7	times	11	are	77	8	times	11	are	88	9	times	11	are	99
7	times	12	are	84	8	times	12	are	96	9	times	12	are	108

10 times 0 are 0	11 times 0 are 0	12 times 0 are 0
10 times 1 are 10	11 times 1 are 11	12 times 1 are 12
10 times 2 are 20	11 times 2 are 22	12 times 2 are 24
10 times 3 are 30	11 times 3 are 33	12 times 3 are 36
10 times 4 are 40	11 times 4 are 44	12 times 4 are 48
10 times 5 are 50	11 times 5 are 55	12 times 5 are 60
10 times 6 are 60	11 times 6 are 66	12 times 6 are 72
10 times 7 are 70	11 times 7 are 77	12 times 7 are 84
10 times 8 are 80	11 times 8 are 88	12 times 8 are 96
10 times 9 are 90	11 times 9 are 99	12 times 9 are 108
10 times 10 are 100	11 times 10 are 110	12 times 10 are 120
10 times 11 are 110	11 times 11 are 121	12 times 11 are 132
10 times 12 are 120	11 times 12 are 132	12 times 12 are 144

SECTION I.

WHERE the multiplier is not greater than 12—

RULE.

1. Place the multiplier under the multiplicand, so that units shall fall under units, tens under tens, &c.

2. Begin with the units' figure and multiply every figure of the multiplicand, setting down and carrying as in Addition.

QUESTION.—When the multiplier is not greater than 12, how do you multiply?

EXAMPLE 1. Multiply 342 by 4.

Hund. Tens. Units.
3 4 2 Multiplicand.
4 Multiplier.

1 3 6 8 Product.

The multiplier (4) being written under the units' figure of the multiplicand; then say, 4 times 2 units are 8 units, and write the 8 under the units; then say, 4 times 4 tens are 16 tens, which are equal to 1 hundred and 6 tens; write the 6 in the tens' place, and carry the 1 hundred to the next product; 4 times 3 hundreds are 12 hundreds, and the 1 hundred to carry makes 13 hundreds, which must then be written, and this row of figures (1368) is the product.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)	(8.)	(9.)
32	34	41	42	30	12	20	22
2	2	2	2	3	4	4	4

(10.)	(11.)	(12.)	(13.)	(14.)	(15.)	(16.)	(17.)
12	13	84	92	98	96	84	85
5	6	7	5	2	3	2	2

(18.)	(19.)	(20.)	(21.)	(22.)	(23.)	(24.)	(25.)
95	96	82	46	76	72	95	98
6	7	5	9	6	9	9	2

(26.)	(27.)	(28.)	(29.)	(30.)	(31.)	(32.)
123	332	333	101	102	103	213
2	2	2	3	3	3	3

(33.)	(34.)	(35.)	(36.)	(37.)	(38.)	(39.)
221	222	322	101	111	200	459
3	3	3	4	4	4	5

(40.)	(41.)	(42.)	(43.)	(44.)	(45.)	(46.)
855	763	796	809	984	897	909
8	9	9	9	10	11	12

47. Multiply 80945 by 2.
48. Multiply 69705 by 3.
49. Multiply 80009 by 4.
50. Multiply 90909 by 5.
51. Multiply 89805 by 6.
52. Multiply 79889 by 7.
53. Multiply 59548 by 8.
54. Multiply 69809 by 9.
55. Multiply 89899 by 11.
56. Multiply 99875 by 12.
57. Multiply 76043 by 2.
58. Multiply 64302 by 3.
59. Multiply 80567 by 4.
60. Multiply 34567 by 6.
61. Multiply 56789 by 7.
62. Multiply 67894 by 8.
63. Multiply 39097 by 9.
64. Multiply 45906 by 11.
65. Multiply 59843 by 12.
66. Multiply 76407 by 2.
67. Multiply 80976 by 3.
68. Multiply 96543 by 4.
69. Multiply 30678 by 5.
70. Multiply 46569 by 6.
71. Multiply 56789 by 7.
72. Multiply 60709 by 8.
73. Multiply 75832 by 9.
74. Multiply 84254 by 11.
75. Multiply 98765 by 12.
76. Multiply 86701 by 2.
77. Multiply 73965 by 3.
78. Multiply 69543 by 4.
79. Multiply 58091 by 5.
80. Multiply 49306 by 6.
81. Multiply 37918 by 7.
82. Multiply 23456 by 3.

SECTION II.

When the multiplier exceeds 12—

RULE.

1. Write the multiplier under the multiplicand, placing units under units, tens under tens, &c., and draw a line beneath.

2. Multiply the multiplicand by the units' figure of the multiplier, (as in sect. I.,) and set down the product.

3. Multiply by each succeeding figure of the multiplier, and set down the product: observing to set down the first figure of each product directly under the figure by which you are multiplying.

4. Add up the several products, and the sum will be the product sought.

PROOF.—Multiply the former multiplier by the multiplicand; if the product be equal to the first, the work will generally be right.

NOTE.—This Rule for multiplication will apply to all numbers; other rules given are merely abbreviations of this rule, and are more convenient for certain numbers. It is generally best to make the smaller number the multiplier.

QUESTIONS.—1. When the multiplier is greater than 12, how do you write the numbers? 2. How do you multiply? 3. What will be the product? 4. How do you prove multiplication? 5. Will this rule for multiplication apply to all numbers? 6. Why do we use any other rule? 7. Would you generally make the smaller or larger of two numbers the multiplier?

EXAMPLE 1. Multiply 658 by 73.

Hund. Tens. Units.
6 5 8 Multiplicand.
7 3 Multiplier.

1974 = 658 × 3
4606 = 658 × 70

48034 Product.

Multiply by the (3) units as in sect. 1. Then multiply by the tens, figure (7) thus: 7 times 8 are 56; and as we are multiplying by tens, the product (56) is tens; the 6 must therefore be written in the tens' place under the 7, and the (5) hundreds carried to the next product, which will be seven times 5, or 35; and as we are multiplying tens by tens, it will be (35) hundreds; and to this we add the 5 hundreds carried, making 40 hundreds; the cipher should therefore be written in the hundreds' place, and the (4) thousands carried to the next product, which will be 7 times 6, or 42, and as we are multiplying (6) hundreds by (7) tens, the product will be (42) thousands, to which we add the (4) thousands carried, making 46 thousands, which we write down. The sum of the numbers is 48034, and must be the product required.

(2.)	(3.)	(4.)	(5.)	(6.)	(7.)
499	634	385	286	638	1268
19	25	27	34	46	54
(8.)	(9.)	(10.)	(11.)	(12.)	(13.)
297	684	609	646	844	6708
34	75	89	76	69	83
(14.)	(15.)	(16.)	(17.)	(18.)	(19.)
989	777	666	555	444	7953
88	777	666	555	444	97

20. 678054 × 895.
21. 680075 × 396.
22. 708089 × 697.
23. 340579 × 897.
24. 615243 × 953.
25. 846203 × 596.
26. 456789 × 356.
27. 578054 × 467.
28. 639807 × 549.
29. 784596 × 635.

30. 8966542 × 7284.
31. 9702346 × 8635.
32. 3685797 × 9217.
33. 5482368 × 6789.
34. 7654329 × 7981.
35. 8783071 × 5847.
36. 3098753 × 3482.
37. 7135975 × 5798.
38. 8248537 × 6957.
39. 9137426 × 7893.

40. Suppose 897 to be a multiplier, and 67093 a multiplicand; what will be the product?

41. If you multiply seventy-seven thousand and seventy-seven by nine hundred and seventy-six, how much will be the product?

42. Multiply six hundred and sixty thousand and eighty-eight by three hundred and seventeen.

43. I wish to know the product of eight hundred and five thousand four hundred and four, multiplied by seven hundred and eleven.

SECTION III.

ABBREVIATIONS.

When the multiplier is 10, 100, 1000, *&c., or* 1 *with any number of ciphers annexed—*

Place as many ciphers to the right-hand of the multiplicand as there are ciphers in the multiplier; and the number thus formed will be the product.

QUESTIONS.—1. When the multiplier is 10, 100, 1000, &c., or one with any number of ciphers annexed, how do you multiply? 2. When you multiply any number by 100, how many ciphers do you place to the right of the number? 3. Why?

EXAMPLE 1. Multiply 6 by 100.

We write the 6, and place two ciphers to the right of it, thus: 600. Now the ciphers occupying the place of units and of tens, the 6 is removed two places to the left; and is therefore increased in value 100 times; because "the value of every figure is increased ten times for each place it is removed to the left." Had the 6 been removed one place to the left, it would have been increased 10 times and become 60; being removed one place more to the left, it becomes 10 times 60, or, as expressed in figures, 600.

2. Multiply 8 by 100.
3. Multiply 86 by 10.
4. Multiply 654 by 100.
5. Multiply 786 by 10000.
6. Multiply 904 by 100.
7. Multiply 866 by 1000.
8. Multiply 957 by 100.
9. Multiply 9 by 1000.

10. Multiply eighteen hundred and four by one thousand.

11. Multiply ninety thousand eight hundred and four by one hundred.

12. Multiply eighty-eight thousand and eighty-eight by ten thousand.

13. What is the product of six hundred and fifty-six thousand six hundred and ten, when multiplied by ten?

14. If seven hundred and ninety-six be multiplied by ten hundred thousand, what will be the product?

15. If six hundred be repeated one hundred times, what will it amount to?

16. When you multiply seven hundred and six by ten, what is the product?

When there are ciphers on the right hand of the multiplier, or multiplicand, or of both factors—

1. Disregard the ciphers, and perform the multiplication with the remaining figures.

2. To the right-hand of this product annex as many ciphers as you have disregarded. The number thus formed will be the product.

Question.—When there are ciphers on the right-hand of either or both factors, how do you multiply?

Example 17. Multiply 78600 by 20.

78600
20
1572000

Disregarding the ciphers, we multiply 786 by 2, which gives 1572; on the right of which we write the three ciphers we have disregarded, and obtain 1572000, which is the product.

(18.)	(19.)	(20.)	(21.)	(22.)
78600	8020	84	95700	795000
230	300	500	65	8

(23.)	(24.)	(25.)	(26.)	(27.)
95600	6340	15960	40890	51030
780	2300	550	69	97400

28. 79500 × 8000.
29. 60940 × 60.
30. 676 × 1700.
31. 5949000 × 150.
32. 735200 × 840.
33. 1841 × 960000.
34. 39870 × 7100.
35. 138500 × 390000.
36. 9174900 × 749000.
37. 3104508 × 17600.

When the multiplier contains a cipher or ciphers, standing between other figures, you need not multiply by them; but when you multiply by the next figure to the left of them, you must be very careful to remember the rule—"Set the first figure of each product directly under the figure by which you are multiplying."

Question.—When the multiplier contains a cipher or ciphers standing between other figures, what must you be careful to do?

EXAMPLE 38. Multiply 8405 by 201.

By RULE as in SECT. II.	By ABBREVIATED RULE.
8405	8405
201	201
8405	8405
0000	16810
16810	1689405
1689405	

39. 98109 × 208.
40. 60234 × 507.
41. 711035 × 109.
42. 35809 × 1001.
43. 50096 × 6008.
44. 860602 × 504.
45. 205099 × 9807.
46. 60906 × 8007.
47. 405306 × 89009.
48. 954032 × 20205.
49. 6207939 × 809005.
50. 9876543 × 50007.
51. 5070109 × 20306.
52. 2304506 × 804009.

When the multiplier is a composite number, or a number that can be produced by multiplying two or more whole numbers together—

Multiply the multiplicand by one of the factors of the multiplier, and multiply that product by the other factor, &c. The last product will be the required product.

QUESTIONS.—1. When the multiplier is a composite number, how do you multiply? 2. What is a composite number? 3. Is 42 a composite number? 4. Is 84 a composite number? 5. What are the factors of 42? 6. What are the factors of 84.

NOTE.—When you have performed one of these examples, by using the factors of the multiplier, satisfy yourself of its correctness by performing the multiplication as in section II.

EXAMPLE 53. Multiply 649 by 42, using the factors 7 and 6.

		PROOF.
649		649
7		42
4543	= 7 times 649.	1298
6		2596
27258	= 6 times 7 times 649, or 42 times 649.	27258

54. Multiply 377 by 12, using the factors 4 and 3.

55. Multiply 1597 by 48, using the factors 6 and 8, or 4 and 12.

56. Multiply 684 by 56, using the factors 7 and 8.

57. Multiply 9357 by 54, using the factors 9 and 6.

58. Multiply 80295 by 81, using the factors 9 and 9.

59. Multiply 29087 by 49, using the factors 7 and 7.

60. Multiply 28609 by 144, using the factors 12 and 12.

61. Multiply 60507 by 84, using the factors 4, 3, and 7.

62. Multiply 63875 by 96, using the factors 6, 8, and 2.

63. Multiply 72049 by 75, using the factors 5, 5, and 3.

64. Multiply 60954 by 125, using the factors 5, 5, and 5.

SECTION IV.

APPLICATION OF MULTIPLICATION.

1. A team hauls 132 bushels of corn in one load. How many bushels can it haul in 77 loads?

2. How many lines are there in 427 pages of a book, if there are 38 lines in one page?

3. A man has sixteen twenty-five cent pieces. How many cents are they worth?

4. One barrel of flour contains 196 lbs. How many pounds do 750 barrels contain?

5. There are 63 gallons in a hogshead. How many gallons are there in 257 hogsheads?

6. There are 5280 feet in a mile. How many feet in 3 miles?

7. There are 10 bags of coffee, each containing forty-eight pounds. How many pounds of coffee in ten bags?

8. The distance from Washington to Boston is 436 miles, and in each mile there are 320 rods. How many rods is it from Washington to Boston?

9. A merchant buys a piece of cloth containing 97 yards, at 3 dollars a yard. What does the piece cost him?

10. What will two houses cost, if one costs two thousand and forty-five dollars ?

11. A yard of fine cloth is worth 875 cents. What are 7 yards worth ?

12. There are 365 days in one year. How many days in 5 years ?

13. How many miles will a man travel in a year, if he travels 25 miles a day ?

14. There are 90 pence in a dollar. How many pence are there in 6075 dollars ?

15. If a clock strikes 156 times in one day, how many times will it strike in one week ?

16. What will a man earn in a year, if he gets 26 dollars a month ?

17. What will 157 pounds of tea cost, at 125 cents per pound ?

18. What will 96 barrels of beef cost, at 14 dollars a barrel ?

19. What is the product of 26715 multiplied by 72 ?

20. If 60789 is the multiplicand, and 64 the multiplier, what is the product?

21. Twenty-nine men paid a debt; each man paying one hundred and five dollars. What was the whole debt?

22. On dividing a certain estate among 13 heirs, each heir receives 1749 dollars. What was the whole estate?

23. How many cents in 605 quarter-dollars ?

24. Suppose 77984 to be a multiplicand, and 807 the multiplier. What will be the product ?

25. How often will a clock strike in three weeks, if it strike 156 times in each day ?

26. How much will it cost to make a road 127 miles long at 705 dollars a mile ?

27. What is the value of 134 tons of hay, at 25 dollars a ton ?

28. If 184 emigrants to the west have 1235 dollars a piece, how much money have they altogether ?

29. How much must I give for 234 hogsheads of molasses, which cost 19 dollars a hogshead ?

30. If 9 men, trading in company, furnished 6307 dollars each, how much did they all furnish ?

31. I have a book containing 421 pages; each page contains 42 lines, and each line 45 letters. How many letters in the book ?

32. How much must a man give for twenty-five hundred and six barrels of flour, at eight dollars a barrel ?

33. How many men are there in an army which consists of 13 regiments, and each regiment of 832 men ?

34. How much is 754 times 8045 dollars ?

35. Two hundred and five men did a piece of work in three hundred and three days. How many days would it have taken one man to do it ?

36. A man hired twelve persons to labour for him at 1 dollar each per day. How much did their wages amount to in 515 days ?

37. If a vessel sails 9 miles an hour, how far can she sail in a week ; there being 24 hours in a day, and 7 days in a week ?

38. If I buy 103 pieces of cloth at 256 dollars a piece, how much must I pay ?

39. How many bricks did a team haul away from a brick-yard in 206 loads, each load containing 1296 bricks ?

40. If 10000 men are paid 165 dollars each, how much are all of them paid ?

41. If an army 100000 men were furnished, before a battle, with 40 cartridges apiece, how many cartridges were delivered to the army ?

42. What is the product of eight thousand seven hundred and three, multiplied by eight hundred and eight ?

43. A merchant bought 75 pipes of wine at 145 dollars a pipe. What did the whole cost ?

44. A merchant bought 137 mules for shipping, at 52 dollars per head. What did they cost ?

45. A man travelled 26 days; travelling 47 miles a day. How far did he travel in the 26 days?

46. A merchant sold 485 tons of iron at 125 dollars a ton. What was the price of the whole?

47. A prize was divided among 47 men, and each man received 35 dollars. What was the value of the prize?

48. What sum of money must be divided among 65 men, so that each man shall receive 65 dollars?

49. A merchant bought 8 pieces of cloth, each piece containing 54 yards, at 5 dollars per yard. How many yards, and what was the cost?

50. A merchant bought 8 bales of cloth, each bale containing 11 pieces, and each piece 29 yards. How many pieces, and how many yards were there in the 8 bales?

51. The distance from Washington to Philadelphia is 136 miles; in each mile there are 320 rods. How many rods from Washington to Philadelphia?

52. The distance from Philadelphia to New Orleans is 1391 miles. How many rods from Philadelphia to New Orleans?

53. In a certain city there are 375 houses; if each house, on an average, contains 5 persons, how many inhabitants in the city?

54. If 997 yards of cloth can be made in one day, how many yards of cloth can be made in 1252 days?

55. If the wages of one man for a certain time amount to 30009 cents, how many cents would be paid to 999 men, at the same rate, and for the same time?

56. One farm cost 6059 dollars. What would 8 farms cost at the same price for each?

57. What will 478 hhds. of sugar cost at 74 dollars a hogshead?

58. If a vessel sails 165 miles in one day, how far can she sail in 569 days?

59. What will 695 yoke of oxen come to, at 75 dollars a yoke?

60. Suppose a crew of men to have provision for 30 days, allowing each man 20 ounces a day. How many ounces of provision have they for each man?

61. Suppose that a ship's crew of 17 men will drink 82 gallons of water in 14 days. How long would it last one man?

62. There are 365 rows of trees in an orchard; 125 trees in a row, and 2000 apples on each tree. How many apples in the orchard?

63. A captain, mate, and 15 sailors took a prize, of which each sailor had 142 dollars; the mate had as much as 4 sailors, and the captain had as much as 6 sailors. Tell the captain's share; the mate's share; and how much all the sailors had.

64. An army of 16530 men, having plundered a city, took so much money that each man received 50 dollars. What was the amount taken?

65. There are 52 weeks in a year. How many weeks in 1844 years?

66. How many days has a man lived, who is 43 years of age?

67. The fore-wheels of a carriage turn round 570 times in a mile; and the hind-wheels 463 times in the same distance. How often would each set of wheels turn round in going from Philadelphia to Lancaster, a distance of 60 miles?

68. How many days from the birth of Christ to the close of 1844, allowing 365 days to a year?

69. Seventy-seven millions seven hundred and seven, multiplied by seven thousand and seven, is how many?

70. The multiplier is one thousand and one; the multiplicand is one thousand and one? What is the product?

71. What is the product of ten thousand and ten, by ten thousand and ten?

72. How many is nine thousand and ninety, taken five hundred and four times?

DIVISION.

Division is the operation by which we find how often one number is contained in another. It has been called a short method of Subtraction.

The **divisor** is the number which we divide by.

The **dividend** is the number to be divided.

The **quotient** shows how often the dividend contains the divisor.

The **remainder** is the number over; and is always less than the divisor.

The sign ÷ is called the sign of division; and when placed between two numbers, shows that the number before it is to be divided by the number after it, thus: 18 ÷ 9 is 2.

Many children do not commit the following table to memory. Such as learn it, will find the advantage of it in their subsequent progress.

DIVISION TABLE.

2 in 2	1 time	3 in 3	1 time	4 in 4	1 time
2 in 4	2 times	3 in 6	2 times	4 in 8	2 times
2 in 6	3 times	3 in 9	3 times	4 in 12	3 times
2 in 8	4 times	3 in 12	4 times	4 in 16	4 times
2 in 10	5 times	3 in 15	5 times	4 in 20	5 times
2 in 12	6 times	3 in 18	6 times	4 in 24	6 times
2 in 14	7 times	3 in 21	7 times	4 in 28	7 times
2 in 16	8 times	3 in 24	8 times	4 in 32	8 times
2 in 18	9 times	3 in 27	9 times	4 in 36	9 times
5 in 5	1 time	6 in 6	1 time	7 in 7	1 time
5 in 10	2 times	6 in 12	2 times	7 in 14	2 times
5 in 15	3 times	6 in 18	3 times	7 in 21	3 times
5 in 20	4 times	6 in 24	4 times	7 in 28	4 times
5 in 25	5 times	6 in 30	5 times	7 in 35	5 times
3 in 30	6 times	6 in 36	6 times	7 in 42	6 times
5 in 35	7 times	6 in 42	7 times	7 in 49	7 times
5 in 40	8 times	6 in 48	8 times	7 in 56	8 times
5 in 45	9 times	6 in 54	9 times	7 in 63	9 times

8 in 8	1 time	9 in 9	1 time	10 in 10	1 time
8 in 16	2 times	9 in 18	2 times	10 in 20	2 times
8 in 24	3 times	9 in 27	3 times	10 in 30	3 times
8 in 32	4 times	9 in 36	4 times	10 in 40	4 times
8 in 40	5 times	9 in 45	5 times	10 in 50	5 times
8 in 48	6 times	9 in 54	6 times	10 in 60	6 times
8 in 56	7 times	9 in 63	7 times	10 in 70	7 times
8 in 64	8 times	9 in 72	8 times	10 in 80	8 times
8 in 72	9 times	9 in 81	9 times	10 in 90	9 times

11 in 11	1 time	12 in 12	1 time	$25 \div 5$, or $\frac{25}{5} =$
11 in 22	2 times	12 in 24	2 times	$36 \div 9$, or $\frac{36}{9} =$
11 in 33	3 times	12 in 36	3 times	$72 \div 8$, or $\frac{72}{8} =$
11 in 44	4 times	12 in 48	4 times	$54 \div 9$, or $\frac{54}{9} =$
11 in 55	5 times	12 in 60	5 times	$60 \div 5$, or $\frac{60}{5} =$
11 in 66	6 times	12 in 72	6 times	$96 \div 12$, or $\frac{96}{12} =$
11 in 77	7 times	12 in 84	7 times	$108 \div 12$, or $\frac{108}{12} =$
11 in 88	8 times	12 in 96	8 times	
11 in 99	9 times	12 in 108	9 times	

SECTION I.

SHORT DIVISION, in which the divisor does not exceed 12—

RULE.

1. Write the divisor on the left of the dividend. Draw a curved line between them, and a straight line under the dividend.

2. Find how often the divisor is contained in the left-hand figure or figures of the dividend, and set down the figure expressing the number of times.

3. If there be a remainder, conceive it to be prefixed to the next figure of the dividend; then find as before, how often the divisor is contained in this number, and set down the figure expressing it to the right of the figure last found.

4. Proceed in this manner from the left to the right-hand, and the row of figures thus obtained will express the number of times the dividend contains the divisor.

5. The remainder may be written after the quotient, with the sign +; it is of the same name as the dividend. When it is written with the divisor under it, it forms a *part of the* quotient, and is of the same name.

Proof.—Multiply the divisor by the quotient, add in the remainder, and you will have the dividend.

Questions.—1. What is division? 2. Spell division. 3. What is the divisor? 4. Spell divisor. 5. What is the dividend? 6. Spell dividend. 7. What is the quotient? 8. Spell quotient. 9. What is the remainder? 10. Spell remainder. 11. Is the remainder always greater, or less than the divisor? 12. When you say "6 is contained in 51 8 times and 3 over," which of the numbers do you use for the divisor; 13. Which for the quotient? 14. Which for the remainder? 15. What is short division? 16. How do you write the numbers down in short division? 17. How do you divide? 18. How do you write the last remainder?

Note.—The industrious pupil will *prove* every example in Division.

Example 1. Divide 846 by 2.

Hund. Tens. Units.
Divisor, 2)8 4 6 Dividend.
4 2 3 Quotient.

Proof.
423 Quotient.
2 Divisor.
846 Dividend.

In this example, since the divisor (2) does not exceed 12, "we write it to the left of the dividend (846), draw a curved line between them, and a straight line under the dividend." We find that the divisor (2) is contained in the left-hand figure of the dividend (8) four times; we set down the 4. There being none over, we say 2 into 4, 2 times; we set down the 2. There being none over, we say 2 into 6, 3 times; we set down the 3. "The row of figures thus obtained (423), will express the quotient." In this example we might say, 2 into 8 hundreds, 4 hundred times; 2 into 4 tens, 2 ten times; 2 into 6 units 3 times: therefore 2 into 846=4 hundred + 2 tens + 3 units times; or, as expressed in figures, 423 times.

Example 2. Divide 728 by 8.

Hund. Tens. Units.
Divisor, 8)7 2 8 Dividend.
9 1 Quotient.

Proof.
91 Quotient.
8 Divisor.
728 Dividend.

We first write the divisor and dividend, as directed; then we find that the divisor (8) is not contained in the left-hand figure of the dividend (7); we therefore conceive the remainder 7 to be prefixed to the next figure 2, making 72, and say 8 into 72, 9 times; we set down the 9 under the 2. We then say, 8 into 8, 1 time; we set down the 1 to the right of the figure last found (9)

(3.) 2)24

(4.) 2)46

(5.) 2)66

(6.) 2)82

(7.) 2)84

(8.) 2)88

(9.) 3)33

(10.) 3)63

(11.) 3)66

(12.) 3)93

(13.) 3)96

(14.) 3)99

15. Divide 2468 by 2.
16. Divide 3696 by 3.
17. Divide 4848 by 4.
18. Divide 5505 by 5.
19. Divide 6726 by 6.
20. Divide 7567 by 7.
21. Divide 8160 by 8.
22. Divide 9279 by 9.
23. Divide 6677 by 11.
24. Divide 7284 by 12.
25. Divide 3456 by 2.
26. Divide 5163 by 3.
27. Divide 4288 by 4.
28. Divide 6645 by 5.
29. Divide 8496 by 6.
30. Divide 2527 by 7.
31. Divide 4656 by 8.
32. Divide 6579 by 9.
33. Divide 2453 by 11.
34. Divide 6996 by 12.
35. Divide 7898 by 11.
36. Divide 7272 by 12.
37. Divide 8648 by 8.
38. Divide 9468 by 12.

EXAMPLE 39. Divide 747 by 4.

4 647 OR 4)647

161+3 $161\frac{3}{4}$

In this example 6 hundreds, 4 tens and 7 units, are to be divided by 4 Now 4 is contained in 6, 1 time and 2 over; we set down the one, which is hundreds, under the 6, and carry the dividend 2 hundreds, which are equal to 20 tens, to the 4 tens, making 24 tens; we then say, 4 into 24, 6 times: we set down the 6 to the right of the figure last found (1); we then say 4 into 7, 1 time and 3 over: we set down the one to the right of the figure last found (6), and the 3 over being the last remainder, we write it after the quotient (161), with the sign +, thus: 161+3; or with the divisor under it thus: $161\frac{3}{4}$.

40. Divide 2781 by 2.
41. Divide 2132 by 3.
42. Divide 3403 by 4.
43. Divide 4632 by 5.
44. Divide 5637 by 6.
45. Divide 6095 by 7.
46. Divide 7609 by 8.
47. Divide 8792 by 9.
48. Divide 9076 by 11.
49. Divide 7304 by 12.
50. Divide 6751 by 2.
51. Divide 5243 by 3.
52. Divide 6799 by 4.
53. Divide 7081 by 5.
54. Divide 8200 by 6.
55. Divide 9075 by 7.
56. Divide 2006 by 9.
57. Divide 3009 by 9.

58. Divide 3456 by 5.
59. Divide 4567 by 6.
60. Divide 5678 by 7.
61. Divide 6789 by 8.
62. Divide 7890 by 9.
63. Divide 8913 by 2.
64. Divide 9654 by 3.
65. Divide 2345 by 4.
66. Divide 3076 by 5.
67. Divide 4007 by 6.
68. Divide 5600 by 7.
69. Divide 6075 by 8.
70. Divide 7504 by 9.
71. Divide 8069 by 11.
72. Divide 9594 by 12.
73. Divide 2065 by 2.
74. Divide 4004 by 3.
75. Divide 5078 by 4.
76. Divide 6002 by 5.
77. Divide 7000 by 6.
78. Divide 8000 by 7.
79. Divide 9001 by 8.
80. Divide 3007 by 2.
81. Divide 4000 by 3.
82. Divide 5607 by 4.
83. Divide 6503 by 5.
84. Divide 7006 by 6.
85. Divide 8074 by 7.
86. Divide 9766 by 8.
87. Divide 6905 by 9.
88. Divide 7034 by 7.
89. Divide 9609 by 12.
90. Divide 8075 by 11.
91. Divide 7549 by 12.
92. Divide 6409 by 9.
93. Divide 7009 by 11.
94. Divide 8008 by 12.
95. Divide 1007 by 11.
96. Divide 2009 by 12.
97. Divide 9876 by 9.
98. Divide 8765 by 11.
99. Divide 7654 by 12.

100. How many times is 3 contained in 702?

101. Suppose 69 to be a dividend, and 3 a divisor; what is the quotient?

102. If 144 is a dividend, and 8 a divisor; what is the quotient?

103. What is the remainder, if 797 be divided by 5?

104. How many times can I subtract 8 from 712?

105. If I subtract 6 as many times as I can from 725, how many will be left?

106. If 7 has been multiplied by some number, and the product is 595; what number was the multiplier?

107. Two numbers multiplied together give a product of 9405; one of the numbers multiplied is 11. What is the other number?

108. Divide 1690 by 9, and prove the work to be right?

109. Divide 1794 by 7, and tell me how many are over?

SECTION II.

LONG DIVISION.

Long division, in which the divisor exceeds 12—

Note.—Long division and short division only differ in this; in short division the operation is carried on mentally, the result only being set down; whereas, in long division, the operation is written out at large.

Rule.

1. Write the divisor to the left of the dividend, as in short division, with a curved line between them, and draw a curved line to the right of the dividend.

2. Find how many times the divisor is contained in the least possible number of figures on the left of the dividend, and write the figure to the right of the dividend.

3. Multiply the divisor by the figure, and place the product under the figures divided.

4. Subtract this product from the figures divided.

5. Bring down the next figure of the dividend, and join it to the right of the remainder.

6. Find how many times the divisor is contained in this number as before, and place the figure to the right of the one last found.

7. Proceed in this manner until there is no figure in the dividend to bring down, and you will have the quotient.

Proof.—Multiply the quotient by the divisor, and to the product add the remainder, (if there be any,) and the sum will be the dividend, if the work be right.

Questions.—1. What is long division? 2. How do long and short division differ? 3. How do you write the numbers in long division? 4. How do you divide? 5. When will you have the quotient? 6. How do you prove long division?

EXAMPLE 1. Divide 6775 by 25.

OPERATION.

```
              Dividend.                              PROOF.
Divisor 25) 6 7 7 5 (271 Quotient.            271 Quotient.
            5 0                                25 Divisor.
            ---                               ----
            1 7 7                             1355
            1 7 5                             542
            -----                             ----
                2 5                           6775 Dividend.
                2 5                           ----
                ---
                0 0
                ---
```

Having written the divisor (25) to the left of the dividend (6775), it is seen that 25 is contained in 67, 2 times: we write the two to the right of the dividend, and multiply the divisor by it, and find the product to be 50: which we write under the figures divided; we then subtract the product (50) from 67, and find the remainder 17; to this remainder (17) we join the next figure (7) of the dividend, making 177; we find that the left-hand figure (2) of the divisor is contained in the left-hand figures (17) of the 177, 8 times, and on trial we find this is too great: for 8 times 25 are 200; we then rub out this product (200), and the figure (8) which we placed in the quotient. We then place a smaller figure (7) in the quotient, and multiply the divisor (25) by the 7, and place the product (175) under the 177: we then subtract the 175 from the 177, and find 2 remaining; to this remainder (2) we join the next figure (5) of the dividend, making 25, and find that the divisor is contained in it 1 time: we write the 1 in the quotient, and multiply the divisor by the 1, giving a product of 25; this product subtracted from the 25, leaves no remainder, and there being no more figures in the dividend to bring down, the row of figures to the right of the dividend (271) is the quotient.

(2.)	(3.)	(4.)	(5.)
14)224(	15)315(	16)512(	17)425(
(6.)	(7.)	(8.)	(9.)
18)594(	19)266(	22)374(	23)483(
(10.)	(11.)	(12.)	(13.)
25)675(	26)858(	23)6754(	36)7897(
(14.)	(15.)	(16.)	(17.)
44)4358(	53)8943(	64)3478(	86)9694(

18. 60670 ÷ 231.
19. 898989 ÷ 576.
20. 980754 ÷ 863.
21. 171084 ÷ 104.
22. 530209 ÷ 505.
23. 865962 ÷ 758.
24. 690708 ÷ 658.
25. 756097 ÷ 609.
26. 809604 ÷ 709.
27. 348095 ÷ 687.
28. 834509 ÷ 936.
29. 908640 ÷ 959.
30. 764329 ÷ 783.
31. 587062 ÷ 593.
32. 864208 ÷ 948.
33. 975319 ÷ 999.
34. 795735 ÷ 825.
35. 1357968 ÷ 998.
36. 2345676 ÷ 765.
37. 3456789 ÷ 843.
38. 4076080 ÷ 306.
39. 5407632 ÷ 407.
40. 6070707 ÷ 606.
41. 7676767 ÷ 754.
42. 8087904 ÷ 909.
43. 9609072 ÷ 896.
44. 3456789 ÷ 752.
45. 4200069 ÷ 899.

SECTION III.

ABBREVIATIONS.

When the divisor is 10, 100, 1000, *or* 1 *with any number of ciphers annexed*—

Cut off as many figures from the right of the dividend as there are ciphers in the divisor. The figures of the dividend not cut off will express the quotient, and the figures cut off will be the remainder.

QUESTIONS.—1. When the divisor is 10, 100, &c., how do you divide? 2. What figures express the quotient? 3. What figures express the remainder?

EXAMPLE 1. Divide 87895 by 100.

OPERATION.

878,95 Ans. $878\frac{95}{100}$

In this example there are two ciphers in the divisor: therefore we cut off two figures (95) from the right of the dividend; the figures not cut off (878) express the quotient, and the figures (95) cut off, the remainder.

2. 16879 ÷ 10.
3. 36584 ÷ 100.
4. 45678 ÷ 1000.
5. 12300 ÷ 1000.
6. 67854 ÷ 100.
7. 25798 ÷ 10000.
8. 678340 ÷ 10000.
9. 123450 ÷ 1000.
10. 56789 ÷ 100.
11. 878000 ÷ 1000.
12. 78954 ÷ 10.
13. 234067 ÷ 10000.

When there are ciphers on the right of the divisor—

1. Cut off the ciphers on the right of the divisor, and cut off the same number of figures from the right of the dividend.

2. Divide the remaining figures of the dividend by the remaining figures of the divisor: this will give the quotient.

3. Place the figures cut off from the dividend to the right of the remainder, and this number will express the true remainder.

QUESTIONS.—1. When there are ciphers standing on the right of the divisor, how do you divide? 2. Where do you place the figures cut off from the dividend, to express the true remainder?

EXAMPLE 14. Divide 73546 by 70.

OPERATION.

70)7354,6

1050+4 over. 46, true remainder.

Ans. $1050\frac{46}{70}$.

In this example we cut off one figure (6), and then find that 7 is contained in the remaining figures of the dividend 1050 times, and 4 over; to the right of this 4 we place the 6 cut off from the dividend, forming the remainder 46, and find the quotient to be 1050 and 46 over, or $1050\frac{46}{70}$, Ans.

15. 7854098 ÷ 690.
16. 6059705 ÷ 600.
17. 7345804 ÷ 8500.
18. 9608701 ÷ 4500.
19. 6009808 ÷ 34000.
20. 1200109 ÷ 6990.
21. 6304052 ÷ 2200.
22. 9630842 ÷ 99000.

When the divisor consists of factors, or is a composite number—

1. Divide the dividend by one of the factors, and this quotient by the other factor, &c. The last quotient will be the quotient required.

2. To find the remainder, multiply the second remainder by the first divisor, and to the product add the first remainder, the sum will be the true remainder.

QUESTIONS.—1. When the divisor is a composite number, how do you divide? 2. How do you find the true remainder when the divisor is a composite number?

NOTE.—Perform all these examples by using the factors of the divisor, and prove your work by *long division.*

EXAMPLE 23. Divide 689 dollars equally between 21 men.

OPERATION.

Factors. $3\times7=21$ $\left\{\begin{array}{l}3)689\\ \overline{}\\ 7)\overline{229}+2\text{, 1st rem.}\end{array}\right.$

$\overline{32}+5$, 2d rem.

$5\times3+2=17$, true remainder.

Ans. $32\frac{17}{21}$ dollars.

PROOF.

21)689($32\frac{17}{21}$, Quotient.
63
59
42
17

Let 3 umpires be chosen to count the money, and let them divide the 689 dollars between themselves, and they will each have a pile containing 229 dollars, and there will be two dollars left; then let each of the umpires divide his pile of 229 dollars into 7 equal piles, and of course there will be 21 equal piles, each containing 32 dollars, and each umpire will have 5 dollars left in his pile, making in the 3 piles 15 dollars, which added to the 2 dollars over on the first division, gives a true remainder of 17 dollars. This 17 dollars can only be divided among 21 men, by giving to each man the fraction of 1 dollar, which is $\frac{17}{21}$; therefore each man will get of the 689 dollars, $32\frac{17}{21}$ dollars.

24. Divide 18567 by 48.
25. Divide 9576 by 72.
26. Divide 87592 by 64.
27. Divide 76958 by 81.
28. Divide 69743 by 18.
29. Divide 10000 by 54.
30. Divide 60758 by 63.
31. Divide 82964 by 24.
32. Divide 98054 by 35.
33. Divide 46709 by 45.

SECTION IV.

APPLICATION OF DIVISION.

NOTE.—Be careful to give the denomination of your answer, whether biscuits, as in question 1st; or five dollars, as in question 2d.

1. Two shipwrecked sailors divided 110 biscuits between them. What was each one's share?

2. A merchant having 526 dollars in silver, wished to get the amount in 5 dollar bank-notes. How many five dollar notes ought he to receive in exchange, and how many silver dollars will he have left?

3. I rode in a rail-road car 111 miles in 3 hours. How many miles did I ride in one hour?

4. How many hours will a traveller be in going 1256 miles, if he rides 8 miles an hour?

5. If you had 7659016 sugar-plums, and were to divide them equally among 8 boys, how many would each boy have?

6. If you had 5706 marbles, and were to make them into 9 equal piles, how many marbles would there be in a pile?

7. How many oranges at 3 cents apiece, can you buy for 6078 cents?

8. A man bought 8 pounds of butter for 248 cents. How much did he give for one pound?

9. A vessel, owned by 7 persons in equal shares, earned 2989 dollars in one year. What was each person's part of the gain?

10. If I sell nine horses for 981 dollars, how much do I get for each horse, allowing that I sell them all at the same price?

11. A drover wished to put 1305 sheep into 5 equal flocks. How many sheep should be put in each flock?

12. Suppose I wish to travel 473 miles in 9 days. How far must I travel each day, if I ride at a uniform rate?

13. A coal merchant bought 1133 dollars worth of coal, at 11 dollars a ton. How many tons did he buy?

14. If five horses are required to draw one wagon, how many wagons might be drawn by 385 horses?

15. Suppose 596 to be a dividend, and 6 a divisor; what is the quotient, and what the remainder?

16. What is the quotient, if the dividend is 784, and the divisor 7?

17. What is the quotient, if the divisor is 7, and the dividend 112?

18. How many yards of cloth, at 6 dollars a yard, can be bought for 5802 dollars?

19. If a man can walk 4 miles an hour, how many hours will it take him to walk 3996 miles?

20. If 3 bushels of wheat will pay for a yard of cloth, how many yards of cloth will 276 bushels pay for?

21. A man intending to go a journey of 685 miles, wishes to perform it in 5 days. How many miles must he travel each day?

22. The distance from the sun is 95000000 miles; and light is 8 minutes travelling from the sun to the earth. How many miles does light travel in a minute?

23. By the census of 1840, there were in the city of Philadelphia 258037 inhabitants, allowing 5 persons to each house. How many houses were there in the city at this time?

24. There are 7 days in a week, and 365 days in a year. How many weeks in a year?

25. Let 1967 dollars be divided between 7 men. How many dollars will each man receive?

26. If six hundred thousand and seventy-six be a dividend, and six be the divisor, what is the quotient?

27. How many sevens are there in two hundred and fifty thousand seven hundred and seven?

28. If a man walks 16425 miles in a year, or 365 days, how far does he walk in one day?

29. There are 1760 yards in one mile. How many yards are there in one third of a mile?

30. There are 10728 eggs to be placed in 24 baskets. How many eggs should be placed in each basket?

31. The sum of 57800 dollars is to be divided among a certain number of men; each is to receive 425 dollars. How many men are to receive the money?

32. A merchant has 5100 pounds of tea, and wishes to put the whole in 60 chests. How many pounds must he put in each chest?

33. A person buys a piece of cloth, containing 36 yards, for which he pays 288 dollars. How much does he pay per yard?

34. There are 24 hours in a day. How many days in 2040 hours?

35. Twenty-three persons dine together; their bill was 92 dollars. How much had each to pay?

36. If there are 689 men in a garrison, and they are supplied with 240461 pounds of beef; how much is that to one man?

37. In a pound there are 16 oz. How many pounds are there in 228360 ounces?

38. There are 160 square rods in an acre. How many acres are there in 2172480 square rods?

39. If you pay 96 cents a yard for coarse cloth, how many yards can you buy for 548928 cents?

40. If a man travels 47 miles a day, how many days would he require to travel 5217 miles?

41. How many times is 3943 contained in 25872006329?

42. If a ship sails 142 miles a day, how many days would it take her to sail 48422 miles?

43. Divide 886888 dollars equally among 236 men?

44. If 75 boys can perform 809625 examples of arithmetic in 5 days, how many examples can 1 boy perform in one day?

45. How many times can twenty-five be subtracted from seven thousand four hundred and four?

46. What is the remainder when seven hundred thousand and seventeen is divided by three hundred?

47. How many times does seven hundred contain seventeen, and how many over?

48. What number must be multiplied by one thousand one hundred and eleven, that the product may be one million, two hundred and thirty-four thousand, three hundred and twenty-one?

49. If nine hundred and nine be a divisor, and one hundred million, one hundred thousand, one hundred and one be a dividend, what will be the remainder?

50. How often can you subtract one hundred and one *from six hundred* thousand, six hundred and six?

MISCELLANEOUS EXAMPLES.

1. If from a thousand you take two hundred and nine, and multiply the remainder by 12, what is the product?

2. From 890 take 745, and to the remainder add 266.

3. How many times 109 are 1308?

4. How many times 7, is 14 repeated as many times as there are units in 706?

5. What is the sum of 196 added as many times as there are units in 196?

6. What would be the expense of laying a railroad from Maine to New Orleans, the distance being 1800 miles, and the railway costing for the grading $7000 per mile, and the rails, timber, bridges, &c., $7000 per mile?

7. In how many days could a passage be made from Maine to New Orleans, on the proposed railway, allowing a car to run 25 miles an hour, and to run both day and night?

8. How many days would it take a man to ride on horseback, from Maine to New Orleans, riding 5 miles an hour, and 10 hours a day?

9. What is the divisor of 761853641, if 9001 be the quotient?

10. What number, multiplied by 3456, will produce 3411072?

11. How many yards of cloth, at 9 dollars a yard, will it take to buy 63 yoke of oxen, at 95 dollars a yoke?

12. If I buy 567 oranges for 956 cents, and sell 203 for 150 cents, and then sell 248 for 574 cents; how many oranges will then be left, and how much will they have cost me a-piece?

13. There are 63 gallons in one hogshead. How many gallons in 25 hogsheads, and 54 gallons?

14. The income of the bishop of Durham, in England, is said to be 292 dollars a day. How many clergymen would this support on a salary of 730 dollars per annum?

15. Five men and four boys earned a sum of money, and divided it, so that each man had 43 dollars, and each boy 26 dollars. How much did they earn?

16. Suppose 5 bushels of wheat to make a barrel of flour. How many barrels of flour can be made from 12 bins of wheat, each containing 75 bushels?

17. In 18 times 95, how many times 5?

18. A man who owned 675 acres of land, purchased 749 acres more, and then divided the whole into 8 equal farms, and sold three of these farms. How many acres had he left?

19. If a man's income be 1500 dollars a year, and his expenses 3 dollars a day, how much will he lay up in a year?

20. A merchant gave 19 dollars a hogshead for 245 hogsheads of molasses, and then sold the whole for 4000 dollars. Did he gain or lose, and how much?

21. If a man's expenses are 2 dollars a day, and his income 26 dollars a week, what can he save in 17 weeks?

22. A hogshead holds 63 gallons. How many gallons of wine are there in 25 hhds., allowing that each hhd. wants 5 gallons of being full?

23. If a man earns 40 dollars a month, and spends 13 dollars a month, how many months will it take him to lay up 297 dollars?

24. If a trader, who has 384 barrels of flour, should lay out 1975 dolls. in buying more flour at the rate of 5 dolls. a bbl.; how many barrels would he have?

25. What number must be added to 9 times 17, in order that the sum may be 200?

26. If a stage goes 12 miles while a rail-road car goes 30, how many miles can a rail-road car go, while the stage is going 144 miles?

27. A drover having 599 dollars, wishes to buy all the oxen he can pay for, at 34 dollars a head, and then lay out the remainder of his money for sheep, at 3 dollars a head. How many of each will he buy?

28. A merchant bought 75 tons of hemp, at 218 dolls. a ton. How many ten dollar bank-notes did it take to pay for the hemp?

29. A merchant bought 695 hhds of sugar, at 45 dolls. a hhd. For how much must he sell it per hhd., to gain 1390 dollars?

30. A farmer sold a yoke of oxen for 90 dollars, 3 cows for 32 dolls. each, 9 calves for 4 dolls. each, and 65 sheep at 4 dollars a head. How much did he receive for them all?

31. The sum of two numbers is 987; one of the numbers is 689. What is the other?

32. The difference of two numbers is 87; the less number is 395. What is the greater?

33. The product of two numbers is 51679680, and one of the factors is 84032. What is the other?

34. The quotient of two numbers is 890, and the divisor is 7984. What is the dividend?

35. A farmer sold 6 tons of hay, at 16 dolls. a ton; 80 bushels of wheat, at 1 doll. a bushel; and took in payment a horse worth 79 dollars, a wagon worth 38 dollars, and the balance in cash. How much money did he receive?

36. A farmer has 14 calves, worth 4 dolls. each; 75 sheep, worth 3 dolls. each; he gives them all for a horse worth 175 dolls., and a wagon. What does the wagon cost him?

37. A teacher has seven thousand nine hundred and seven pens; and wishes to give to each of seventeen girls as many as he can, giving to each an equal number. How many pens will each girl have, and how many will the teacher have left?

38. If 363 men can do a piece of work in 137 days, how long would it take 1 man to do it?

39. A man has 6 children, all of whom are married, and each has four children; two of these grand-children are married, and each has one child. How many children, grand-children, and great-grand-children, are there?

TABLES OF CURRENCY, WEIGHTS, AND MEASURES.

FEDERAL MONEY

Is the currency of the United States. Its denominations are eagle, dollar, dime, cent, and mill.

10 mills (*m.*)	make	1 cent,	marked *ct.*
10 cents		1 dime,	*d.*
10 dimes		1 dollar,	$.
10 dollars		1 eagle,	*E.*

NOTE.—A dollar is equal to 4*s.* 6*d.* Sterling money.

ENGLISH, OR STERLING MONEY

Is the national currency of England. Its denominations are guinea, pound, shilling, penny, and farthing.

4 farthings (*far.*)	make	1 penny,	marked *d.*
12 pence		1 shilling,	*s.*
20 shillings		1 pound,	£.
21 shillings		1 guinea,	*G.*

NOTE.—In commercial transactions the *par value* of the pound sterling is always rated at $4\ 44\frac{4}{9}$; but the *true value*, founded on the comparison of British and American gold coins, is $4\ 84\frac{3}{10}$.

TROY WEIGHT.

By this weight gold, silver, jewels, and liquors are weighed. Its denominations are pound, ounce, pennyweight, and grain.

24 grains (*gr.*)	make	1 pennyweight,	marked *pwt.*
20 pennyweight		1 ounce,	*oz.*
12 ounces		1 pound,	*lb.*

APOTHECARIES' WEIGHT.

By this weight apothecaries mix their medicines; but they buy and sell by Avoirdupois weight. Its denominations are pound, ounce, dram, scruple, and grain.

20 grains (*gr.*)	make	1 scruple,	marked ℈.
3 scruples		1 dram,	ʒ.
8 drams		1 ounce,	℥.
12 ounces		1 pound,	℔.

AVOIRDUPOIS WEIGHT.

Is the common weight used in weighing groceries, and all coarse commodities. Its denominations are ton, hundred-weight, quarter, pound, ounce, and dram.

16 drams (*dr.*)	make	1 ounce,	marked *oz.*
16 ounces		1 pound,	*lb.*
28 pounds		1 quarter,	*qr.*
4 quarters, or 112 lbs.		1 hundred weight,	*cwt.*
20 hundred weight, or 2240 lbs.		1 ton,	*T.*

NOTE.—The Troy and Apothecaries' pound each weighs 5760 grs. the Avoirdupois pound is heavier, weighing 7000 grs.

LONG MEASURE

Is used for length and distance. The denominations, are degree, league, mile, furlong, rod, yard, foot, inch, and barley-corn.

3 barley-corns (*b. c.*)	make	1 inch,	marked *in.*
12 inches		1 foot,	*ft.*
3 feet, or 36 in.		1 yard,	*yd.*
5½ yards, or 16½ ft.		1 rod, pole, or perch,	*rd.*
40 rods, or 220 yds.		1 furlong,	*fur.*
8 furlongs, or 1760 yds.		1 mile,	*m.*
3 miles		1 league,	*L.*
60 geographical, or 69½ statute miles		1 degree,	*Deg.* or °.
360 degrees		1 great circle or circumference of the earth.	

NOTE.—A hand is four inches, and is used in measuring the height of horses. A fathom is 2 yards, or 6 feet; and is used to measure the depth of water. A chain is used by surveyors to measure land; and is 4 rods, or 66 feet long.

CLOTH MEASURE.

Cloth measure is used for measuring cloth, tapes, muslin, &c. Its demominations are Ell French, Ell English, Ell Flemish, yard, quarter, nail, and inch.

2¼ inches (*in.*)	make	1 nail,	marked *na.*
4 nails		1 quarter of a yd.	*qr.*
4 quarters		1 yard,	*yd.*
3 quarters		1 Ell Flemish,	*E. Fl*
5 quarters		1 Ell English,	E. E.
6 quarters		1 Ell French,	E. F.

SQUARE MEASURE.

Square measure is used in measuring land, boards, and any thing in which length and breadth are both considered. Its denominations are square mile, acre, rood, square rod, square yard, square foot, and square inch.

144 sq. inches (*sq. in.*) make	1 square foot, marked	*sq. ft.*
9 square feet	1 square yard,	*sq. yd.*
30¼ square yards	1 sq. pole, or perch,	*P.*
40 square perches	1 rood,	*R.*
4 roods	1 acre,	*A.*
640 acres	1 sq. mile,	*sq. m.*

SOLID, OR CUBIC MEASURE.

Solid, or cubic measure is used in measuring stone, timber, earth and such other things as have the dimensions of length, breadth, and depth or thickness. Its denominations are ton, cord, cubic yard, cubic foot, and cubic inch.

1728 cubic inches (*C. in.*) make	1 cubic foot, marked	*C. ft.*
27 cubic feet	1 cubic yard,	*C. yd.*
40 feet of round timber, or 50 ft. of square timber	1 ton,	*T.*
128 cubic feet	1 cord of wood,	*C.*

NOTE.—A cord of wood is a pile 8 ft. in length, 4 ft. in width, and 4 ft. in height. A cord-foot is 16 solid feet, or one foot in length of the pile which makes a cord. A perch of stone is 16½ ft. long, 1½ ft. wide, and 1 ft. high.

WINE, OR LIQUID MEASURE

Is used for measuring all liquors excepting beer and milk. Its denominations are tun, pipe, hogshead, barrel, gallon, quart, pint, and gill.

4 gills (*gi.*) make	1 pint, marked	*pt.*
2 pints	1 quart,	*qt.*
4 quarts	1 gallon,	*gal.*
31½ gallons	1 barrel,	*bar.*
63 gallons	1 hogshead,	*hhd.*
2 hogsheads, or 126 gals.	1 pipe, or butt,	*Pi.*
2 pipes, or 4 hhd.	1 tun,	*T.*

NOTE.—A tierce contains 42 gallons. A puncheon 84 gallons. The vessels called hogsheads are of various capacities, and usually hold 126 *gallons, being, in reality*, pipes. A gallon, wine measure, contains 231 *cubic inches*

ALE, OR BEER MEASURE

Is used for measuring ale, beer, and milk. Its denominations are hogshead, barrel, kilderkin, firkin, gallon, quart, and pint.

2 pints (*pt.*)	make	1 quart,	marked *qt.*
4 quarts	- - - -	1 gallon,	- - - *gal.*
36 gallons	- - - -	1 barrel,	- - - *bar.*
54 gallons, or $1\frac{1}{2}$ bar.	-	1 hogshead	- - *hhd.*

NOTE.—A gallon, beer measure, contains 282 cubic inches.

DRY MEASURE

Is used in measuring all dry articles, such as grain, fruits, salt, coal, &c. Its denominations are chaldron, bushel, peck, quart, and pint.

2 pints (*pt.*)	make	1 quart,	marked *qt.*
8 quarts	- - - -	1 peck,	- - - *pk.*
4 pecks, or 32 quarts	-	1 bushel,	- - - *bu.*
36 bushels	- - - -	1 chaldron,	- - *ch.*

NOTE.—A gallon, dry measure, contains $268\frac{4}{5}$ cubic inches. A bushel is usually $18\frac{1}{2}$ inches in diameter, 8 inches deep, and contains $2150\frac{2}{5}$ cubic inches.

TIME.

The year is divided into 12 calendar months, which contain an unequal number of days, as stated in the following lines—

Thirty days has September,
April, June, and November;
February has twenty-eight alone,
And all the rest have thirty-one;
Leap year comes one year in four,
Then February has one day more.

The denominations of time are century, year, month, week, day, hour, minute, and second.

60 seconds (*sec.*)	make	1 minute,	marked *min.*
60 minutes	- - - - - -	1 hour,	- - - - - *hr.*
24 hours	- - - - - -	1 day,	- - - - - *da.*
7 days	- - - - - - -	1 week,	- - - - - *wk.*
365 days usually	- - - -	1 civil or calendar year,	*yr.*
365 da. 5 hrs. 48 min. 48 sec.		1 true or solar year,	sol. yr.
100 years	- - - - - - -	1 century	- - - - cent.

In common calculations it is usual to consider

30 days to make 1 month.
4 weeks - - - 1 month.
52 weeks - - - 1 year.

CIRCULAR MEASURE.

Circular measure is used in estimating latitude and longitude, and also in measuring the motions of the heavenly bodies. Every circle, whether great or small, is supposed to be divided into 360 equal parts, called degrees. Its denominations are circle or circumference or revolution, sign, degree, minute, and second.

60 seconds (″) make 1 minute, marked ′.
60 minutes - - - 1 degree, - - - - - - *deg.* or °.
30 degrees - - - - 1 sign, - - - - - - *S.*
12 signs, or 360° 1 circle, circumference, or revolution. *Cir.*

MISCELLANEOUS TABLE.

12 things make 1 dozen, marked *doz.*
12 dozen - - - - 1 gross.
12 gross, or 144 doz. 1 great gross.
20 things - - - 1 score.

ALSO,

24 sheets of paper make 1 quire.
20 quires - - - - - 1 ream.

ALSO,

112 pounds make 1 quintal of fish.
200 pounds - - - 1 barrel of beef or pork.
196 pounds - - - 1 barrel of flour.

BOOKS.

A sheet folded in two leaves is called a folio, marked *fol.*
" " in four leaves - - a quarto or 4to.
" " in eight leaves - - an octavo or 8vo.
" " in twelve leaves - a duodecimo or 12mo.
" " in eighteen leaves an eighteen mo.

COMPOUND NUMBERS.

Compound Numbers are those which are employed to express several denominations. Under this head are classed all the sub-divisions of currency, weight, &c.

The operations on Compound Numbers differ from those on Simple Numbers more in appearance than in reality.—This you may ascertain by viewing the following table of Simple Numbers, arranged as the tables of Compound Numbers are, and by performing operations on Simple Numbers in the same manner as if they were Compound Numbers.

TABLE OF SIMPLE NUMBERS.

10 Units	make	1 Ten.
10 Tens	"	1 Hundred.
10 Hundreds	"	1 Thousand.
10 Thousands	"	1 Ten Thousand.
10 Ten Thousands	"	1 Hundred Thousand.
&c.		&c.

1. Add 134567, 243046, 104782, and 342980.

	10	10	10	10	10
Hund. Thous.	Ten Thous.	Thousands.	Hundreds.	Tens.	Units.
1	3	4	5	6	7
2	4	3	0	4	6
1	0	4	7	8	2
3	4	2	9	8	0
8	2	5	3	7	5

Perform the divisions in the above example, on the slate, and then *perform many other examples* in the Addition, Subtraction, Multiplication, and Division of Simple Numbers, by a similar process, and you will be prepared to understand the operations on Compound numbers.

Note to Teachers.—Let the pupil be taught to distinguish the different Weights, Measures, &c., by the *marks* of the denominations, and by the presence of certain denominations; thus, pwt. is only found in Troy Weight; ℈ in Apothecaries: Cwt. in Avoirdupois, &c.

Let them also be carefully taught to multiply and divide by 5½, 16½, 2¼, 30¼, and 31½.

To avoid the very *prevalent error of inserting special rules, when general rules are equally clear*, I shall not insert an article on Federal Money; but request the particular attention of the pupil to the sub joined observations, and advise that the *very young* be requested to perform the operations on Federal Money, by the general rules for *compound* numbers.

$ is the sign of dollars; and when dollars and cents are written together, a period is placed to the left of the cents; thus five dollars and seventeen cents are written, $5.17.

There must be two places of figures for cents; hence, when the number of cents is less than 10, a cipher must be placed to the left of the figure that expresses them; thus, five dollars and eight cents must be written, $5.08.

Dollars may be reduced to cents by annexing two ciphers, and into mills by annexing three; thus $5 = 500 cents; $6 = 6000 mills.

Cents may be reduced to mills by annexing one cipher; thus, 8 cents = 80 mills.

Mills may be reduced to cents by pointing off one figure to the right, and into dollars by pointing off three figures to the right.

Cents may be reduced to dollars by pointing off two figures to the right for cents; the figures to the left of the cents will express the dollars.

QUESTIONS.—1. What are Compound Numbers? 2. What are classed under the head of Compound Numbers? 3. Do the operations on Compound Numbers *really* differ from those on Simple Numbers? 4. Make the sign for dollars on the Black Board? 5. When dollars and cents are written together, what must be done? 6. How many places of figures must there be for cents? 7. When the number of cents is less than 10, what must be done? 8. How do you reduce dollars to cents? to mills? 9. How do you reduce cents to mills? 10. How do you reduce mills to cents? to dollars? 11. How do you reduce cents to dollars?

REDUCTION.

NOTE.—The examples to which a * is prefixed, may be omitted until the pupil is acquainted with fractions; or, they may be performed by aid of a note on p. 67, of the Second Part.

REDUCTION is the changing of a quantity from its number in one denomination, to its number in another denomination, without altering its value.

When a higher denomination is to be reduced to a lower, *Multiply the higher denomination by so many as it takes of the lower denomination to make one of the higher; to the product add so many of the lower denomination as are expressed in the given example. Perform a like operation on this product and on each succeeding product.*

EXAMPLE 1. Reduce 77 dollars to cents.
2. Reduce 64 dollars to mills.
3. How many cents in 7 dollars and 9 cents?
4. How many cents in 87 dollars and 15 cents?
5. How many pence in 14 pounds sterling?
6. How many farthings in 23 pounds?
7. Reduce £23 7s. 6d. to pence.
8. Reduce £187 19s. 9d. 3qr. to farthings.
9. Reduce 3 lb. 9 oz. 8 pwt. 5 gr. to grains.
10. Reduce 16 lb. 6 oz. 16 pwt. 16 gr. to grains.
11. Reduce 5 ℔. 7 ℥. 3 ʒ. 2 ℈. 17 gr. to grains.
12. Reduce 11 ℔. 11 ℥. 6 ʒ. 1 ℈. to scruples.
13. Reduce 1 ton to drams.
14. Reduce 5 T. 7 cwt. 3 qr. 27 lb. 14 oz. 14 dr. to drs.
*15. How many inches in one mile?
*16. Reduce 1 L. 2 m. 7 fur. 16 rd. 3 yd. 2 ft. to feet
17. How many inches in one yard?
18. Reduce 1 yd. 1 qr. 1 na. to nails.
19. How many nails in one Ell English?
*20. How many square inches in one acre?
*21. How many square inches in one square mile?
22. How many cubic inches in one cord of wood?
23. How many gills in 1 tun?
24. How many pints in 1 hogshead, Wine Measure?
25. How many pints in 1 hogshead, Ale Measure?
26. How many pints in 1 bushel?
27. Reduce 17 bu. 3 pk. 7qt. 1 pt. to pints.
28. Reduce 29 bu. 2 pk. 6 qt. 1 pt. to pints.
29. Reduce 174 bu. 1 pk. 3 qu. to quarts.
30. How many seconds in one day?
31. How many seconds in one true or solar year?
32. Reduce 15 wk. 5 da. 17 hr. 35 min. to minutes.
33. How many hours in 52 weeks?
34. How many ″ in 360°?
35. Reduce 5° 49′ 45″ to seconds.
36. How many things in one great gross?
37. How many things in one gross?
38. How many sheets of paper in one ream?
39. Reduce 62 lb. 7 oz. 14 dwt. 18 gr. to grains.
40. Reduce 178 lb. 6 oz. 19 dwt. 23 gr. to grains.
41. Reduce 17 ℔. 7 ℥. 7 ʒ. 2 ℈. 17 gr. to grains.

42. Reduce 204 ℔. 11 ℥. 6 ʒ. 1 ℈. 11 gr. to grains.
43. Reduce 55 cwt. 3 qr. 24 lb. 11 oz. 14 dr. to drs.
*44. Reduce 7 miles, 7 furlongs, 3 yards, to inches.
*45. Reduce 69 m. 6 fur. 7 rd. 4 yd. 2 ft. 8 in. to in.
*46. Reduce 5 E. French, 4 qr. 3 na. 1 in. to inches.
47. In 1 tun, 1 pipe, 1 hhd. 1 bbl. 1 gal. 1 qt. 1 pt. 1 gi. there are how many gills?

When a lower denomination is to be reduced to a higher, *Divide the lower denomination by so many as are required of it to make one of the next higher denomination; the quotient will be of the higher denomination, and the remainder will be of the same denomination with the dividend. Perform a like operation on this quotient, and on each succeeding quotient.*

48. In 76845 cents; how many dollars?
49. In 69704 cents; how many dollars?
50. How many dollars in 6807004 mills?
51. How many cents in 700 mills?
52. How many dollars in 60000 mills?
53. Reduce 100000000 mills to dollars.
54. How many pounds in 240 pence?
55. How many guineas in 2750 pence?
56. How many guineas in 6000 shillings?
57. Reduce 600047 farthings to pounds.
58. Reduce 785059 farthings to guineas.
59. Reduce 785469 grains, Troy, to the higher denominations.
60. Reduce 86917 grains, Troy, to pounds.
61. Reduce 670897 grains, Apothecaries, to pounds.
62. Reduce 7697 scruples to pounds.
63. Reduce 6908 dr., Avoirdupois, to the higher denominations.
64. Reduce 6970876543 drams, Avoirdupois, to tons.
65. How many cwt. in 697854689 drams?
66. How many tons in 796754321 ounces?
*67. How many miles in 68457623 feet?
*68. How many leagues in 6897432694 inches?
*69. Reduce 784820 barley corns to leagues.
70. How many yards in 267845 nails?
71. How many E. English in 267845 nails?

72. How many E. Flemish in 267845 nails?
73. How many E. French in 267845 nails?
*74. Reduce 6070543489 square inches to sq. miles.
75. In 709573241762 cubic inches, how many cords?
76. Reduce 7059678432175 gills to tuns.
77. Reduce 7059678432175 pints to tuns.
78. Reduce 674547076 pints, Ale measure, to hhds.
79. Reduce 678546932 pints to chaldrons.
80. In 678543206047 seconds, how many weeks?
81. In 678543206047 seconds, how many degrees?
82. In 654321708 sheets of paper, how many reams?
83. In 7097 grains of rhubarb, how many pounds?
84. In 7097 grains of silver, how many pounds?
85. In 707 drams of medicine, how many pounds?
86. In 707 drams of sugar, how many pounds?
87. How many of the higher denominations in 678543?
88. Reduce 879654 gr., Troy, to the higher denominations.

ADDITION OF COMPOUND NUMBERS.

Write the numbers of each denomination in a separate column. Add the numbers of the lowest denomination together, and divide their sum by the number which is required of this denomination to make one of the next higher. Write the remainder under the column added, and carry the quotient to the next higher denomination.

Proceed thus with all the denominations.

Ex.		$	*ct.*	*m.*	$	*ct.*	*m.*	$	*ct.*	*m.*	$	*ct.*	*m.*
1.	+	177	16	7	309	17	5	204	07	2	179	80	4
2.	+	295	13	2	117	14	8	125	27	8	865	32	1
3.	+	396	28	5	384	65	9	245	84	2	902	07	6
4.	+	284	07	2	100	00	7	209	08	0	804	57	2
5.	+	104	80	7	204	50	5	307	84	2	605	73	2
6.	+	206	72	1	109	73	2	809	72	9	847	65	3
7.	+	176	29	4	509	40	1	208	10	0	921	87	2
8.	+	200	44	3	100	00	0	200	79	8	840	08	9
9.	+	769	50	8	896	87	9	798	69	7	923	07	6
10.	+	1695	84	0	697	32	4	876	56	9	845	62	7

Ex.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
11. +	177	12	6	109	18	1	104	15	5	102	14	7
12. +	109	12	4	178	16	5	197	13	8	104	19	9
13. +	695	11	8	684	7	4	609	17	3	845	16	2
14. +	100	15	3¾	207	14	2¼	809	13	7¾	297	10	9¼
15. +	609	10	2¼	209	13	7¾	607	3	2¼	209	7	4¾
16. +	107	6	5½	617	2	3¾	319	12	7½	976	2	3½
17. +	719	2	3½	897	17	2¼	296	3	8½	207	9	8¾
18. +	645	17	9¾	785	13	8¼	976	18	2½	687	12	3½
19. +	976	16	5½	843	14	2¾	954	13	6½	302	17	2¼
20. +	100	10	10½	178	6	3¾	854	3	2½	876	12	5

Ex.	*lb.*	*oz.*	*pwt.*	*gr.*	*lb.*	*oz.*	*pwt.*	*gr.*	*lb.*	*oz.*	*pwt.*	*gr.*
21. +	1	8	18	12	9	6	19	9	11	5	3	21
22. +	7	9	13	18	6	4	15	15	16	7	8	1
23. +	6	7	0	6	15	3	6	7	14	8	12	14
24. +	6	6	6	6	7	7	7	7	8	8	8	8
25. +	4	6	6	17	15	0	4	0	3	0	0	6

26. Add 9 ℔. 7 ℥. 6 ʒ. 2 ℈. 17 gr., 4 ℔. 6 ℥. 3 ʒ. 1 ℈. 19 gr., 16 ℔. 11 ℥. 6 ʒ. 13 gr., 4 ℔. 2 ℥. 11 gr., 4 ℔. 2 ℥. 2 ʒ. 2 ℈. 2 gr.

27. Add 8 ℔. 8 ℥. 1 ℈. 15 gr., 2 ℔. 7 ℥. 15 gr., 4 ℔. 5 ℥. 3 ʒ. 1 ℈. 14 gr., 5 ℔. 6 ℥. 7 ʒ., 6 ℔. 3 ℥. 15 gr., 7 ℔. 4 ʒ. 8 gr.

28. Add 7 ℔. 5 ℥. 5 ʒ. 2 ℈. 11 gr., 6 ℔. 2 ʒ. 6 gr., 7 ℔. 7 ℥., 6 ℔. 6 ℥. 3 gr., 8 ℔. 4 ℥. 2 ℈. 15 gr., 9 ℔. 4 ℥. 5 ʒ. 5 gr.

29. Add 4 ℔. 5 ℥. 5 ʒ. 2 ℈. 15 gr., 5 ℔. 6 ℥. 3 ʒ. 1 ℈., 3 ℔., 5 ℔. 11 ℥. 6 ʒ., 2 ℥. 2 ʒ., 6 ℥. 1 ℈. 2 gr., 17 ℔.

30. Add 4 ℔. 4 ℥. 4 ʒ. 4 gr., 3 ℔. 2 ℥. 1 ʒ. 1 ℈. 1 gr., 3 ℔. 1 ℥. 6 ʒ. 16 gr., 2 ℔. 4 ℥. 3 ʒ. 1 ℈. 16 gr., 2 ℔. 2 ℥. 2 ʒ.

31. Add 2 T. 17 cwt. 3 qr. 27 lb. 15 oz. 15 dr., 3 T. 19 cwt. 3 qr. 26 lb. 15 oz. 15 dr., 4 T. 18 cwt. 3 qr. 26 lb. 14 oz. 15 dr., 6 T. 7 cwt.

32. Add 3 T. 14 cwt. 2 qr. 26 lb. 14 oz. 5 dr., 6 T. 17 cwt. 1 qr. 26 lb. 13 oz. 7 dr., 5 T. 14 cwt. 2 qr. 17 lb. 13 oz. 6 dr.

33. Add 2 T. 6 cwt. 1 qr. 5 lb. 8 oz. 8 dr., 17 T. 16 cwt. 3 qr. 14 lb. 10 oz. 10 dr., 5 T. 16 cwt. 3 qr. 10 lb. 7 oz. 7 dr.

34. Add 6 T. 17 lb. 6 dr., 7 T. 7 cwt., 3 cwt., 9 T. *18 cwt. 17 lb., 3 T.* 3 cwt. 3 qr. 3 oz., 4 T. 6 oz. 7 dr.

*35. Add together 1 m. 5 fur. 37 rd. 5 yd. 2 ft. 11 in., 36 rd. 4 yd. 2 ft. 9 in., 15 rd. 0 ft. 9 in., 17 rd. 4 yd. 1 ft. 8 in., 16 rd. 4 yd. 2 ft.

*36. Add together 2 m. 7 fur. 36 rd. 5 yd. 2 ft. 10 in., 1 m. 6 fur. 30 rd. 4 yd. 1 ft. 7 in., 1 L. 1 m. 1 fur. 1 rd. 1 yd. 1 ft. 1 in. 1 b. c.

*37 Add together 1 m. 2 fur. 39 rd. 5 yd. 2 ft. 11 in., 1 m. 7 fur. 38 rd. 5 yd. 2 ft. 10 in., 1 L. 1 m. 6 fur. 36 rd. 5 yd. 2 ft. 10 in.

38. Add together 18 yd. 2 qr. 3 na., 17 yd. 3 qr. 3 na., 18 yd. 2 qr. 1 na., 19 yd. 3 qr. 3 na., 21 yd. 2 qr. 0 na., 89 yd. 3 qr. 3 na.

39. Add together 79 E. Fl. 2 qr. 3 na., 18 E. Fl. 2 qr. 2 na., 64 E. Fl. 2 qr. 3 na., 97 E. Fl. 2 qr. 2 na., 85 E. Fl. 2 qr. 3 na.

40. Add together 55 E. E. 4 qr. 3 na., 64 E. E. 4 qr. 2 na., 7 E. E. 4 qr. 2 na., 97 E. E. 3 qr. 2 na., 174 E. E. 3 qr. 2 na.

41. Add together 7 E. Fr. 5 qr. 3 na., 197 E. Fr. 4 qr. 3 na., 204 E. Fr. 4 qr. 2 na., 97 E. Fr. 0 qr. 2 na., 87 E. Fr. 4 qr. 2 na.

*42. Add together 76 sq. m. 603 A. 3 R. 36 P. 30 sq. yd. 8 sq. ft. 138 sq. in., 184 sq. m. 607 A. 3 R. 27 P. 28 sq. yd. 7 sq. ft. 17 sq. in., 79 sq. m. 567 A. 2 R. 28 P. 25 sq. yd. 8 sq. ft. 138 sq. in.

43. Add together 7 cord. 120 C. ft. 1607 C. in., 6 cord. 117 C. ft. 1567 C. in., 177 cord. 117 C. ft. 1498 C. in., 19 cord. 109 C. ft. 7 C. in.

44. Add together 77 C. yd. 26 C. ft. 1727 C. in., 109 C. yd. 25 C. ft.

45. Add together 1 T. 1 Pi. 1 hhd. 61 gal. 3 qt. 1 pt. 3 gi., 17 T. 1 Pi. 1 hhd. 61 gal. 3 qt. 1 pt. 3 gi., 17 T. 1 Pi. 1 hhd. 61 gal. 3 qt. 1 pt. 3 gi.

46. Add together, Ale Measure, 77 hhd. 1 bar. 35 gal. 3 qt. 1 pt., 16 hhd. 1 bar. 32 gal. 3 qt. 1 pt., 109 hhd. 1 bar. 31 gal. 3 qt. 1 pt.

47. Add together 172 ch. 35 bu. 3 pk. 7 qt. 1 pt., 104 ch. 32 bu. 3 pk. 6 qt. 0 pt., 167 ch. 34 bu. 2 pk. 6 qt. 0 pt.

48. Add together 4 yr. 11 mo. 3 wk. 6 da. 20 hr., 7 yr. 8 mo. 2 wk. 5 da. 15 hr., 6 yr. 9 mo. 2 wk. 5 da. 17 hr.

49. Add together 3 wk. 6 da. 19 hr. 57 min. 45 sec., 4 wk. 5 da. 17 hr. 46 min. 39 sec., 5 wk. 5 da. 53 min. 54 sec.

50. Add together 50 deg. 45 min. 35 sec., 60 deg. 37 min. 49 sec., 40 deg. 55 min. 57 sec.

SUBTRACTION OF COMPOUND NUMBERS.

Write the smaller number under the greater, placing the same denominations directly under each other.

Begin with the lowest denomination, and perform Subtraction on each denomination separately. Whenever the number expressing any denomination in the upper line is smaller than the number directly under it, add to the upper number so many as are required of this denomination to make one of the next higher, and consider the number of the next higher denomination in the upper line, to be one less than it stands.

	$	cts.	m.		$	cts.	m.		£	s.	d.		£	s.	d.
1.	607	48	5	—	304	02	9	21.	179	16	7¼	—	79	17	8¾
2.	854	37	6	—	269	49	8	22.	674	17	8½	—	574	18	9
3.	703	00	0	—	698	00	1	23.	563	12	7¾	—	438	14	8¼
4.	687	42	1	—	348	76	5	24.	497	3	2¼	—	67	10	7
5.	696	32	8	—	427	63	1	25.	684	19	9	—	180	7	10¾
6.	368	76	2	—	157	89	6	26.	496	0	0	—	340	0	0½
7.	410	00	1	—	381	11	8	27.	607	8	8	—	506	8	8¾
8.	567	11	2	—	469	33	3	28.	346	5	9¼	—	237	12	10¾
9.	643	27	5	—	580	72	3	29.	687	0	11¾	—	398	0	11¾
10.	154	62	7	—	87	76	9	30.	395	17	0	—	286	18	1½
11.	346	87	5	—	65	47	8	31.	687	19	11½	—	300	0	0¾
12.	954	23	0	—	746	84	1	32.	606	1	1¼	—	307	2	2½
13.	634	10	2	—	347	21	4	33.	999	9	9	—	198	9	9¼
14.	763	56	1	—	476	66	2	34.	644	14	4¾	—	327	16	8
15.	693	62	8	—	597	63	7	35.	100	10	0	—	100	9	0¼
16.	574	31	2	—	374	31	3	36.	766	12	8	—	349	13	11¾
17.	666	66	6	—	555	55	7	37.	684	10	10¼	—	225	3	7¾
18.	840	00	2	—	696	03	4	38.	796	17	0	—	349	19	0½
19.	630	10	2	—	430	10	9	39.	600	0	11	—	282	1	1¼
20	760	14	2	—	661	25	5	40.	593	12	6¾	—	300	16	11

41. 94 lb. 11 oz. 19 pwt. 11 gr.—79 lb. 8 oz. 0 pwt. 23 gr.

42. 176 lb. 1 oz. 1 pwt. 1 gr.=54 lb. 7 oz. 7 pwt. 17 gr.

43. 6007 lb. 3 oz. 15 pwt. 20 gr.—4907 lb. 4 oz. 16 pwt.

44. 595 ℔. 8 ℥. 3 ʒ. 1 ℈. 9 gr.—196 ℔. 9 ℥. 6 ʒ. 2 ℈. 17 gr.

45. 16009 ℔. 7 ℥. 5 ʒ. 1 ℈. 2 gr.—609 ℔. 11 ℥. 7 ʒ. 2 ℈. 15 gr.

46. 57 T. 11 cwt. 1 qr. 17 lb. 13 oz. 8 dr.—38 T. 15 cwt. 3 qr. 27 lb. 15 oz.

47. 16 T. 15 cwt. 2 qr. 25 lb. 10 oz. 5 dr.—7 T. 18 cwt. 3 qr. 12 lb. 7 oz. 6 dr.

*48. 17 L. 2 m. 6 fur. 3 rd. 2 yd. 2 ft. 9 in. 2 b. c.—14 rd. 3 yd. 1 ft. 7 in. 1 b. c.

*49. 184 L.—163 L. 1 m. 1 fur. 5 rd. 5 yd. 1 ft. 2 in.

50. 765009 yd. 2 qr. 2 na.—68476 yd. 3 qr. 3 na.

51. 6975 E. Fr. 3 qr. 2 na.—867 E. Fr. 2 qr. 1 na.

52. 5786 E. E. 2 qr. 1 na.—3785 E. E. 1 qr. 1 na.

53. 6754 E. Fl. 2 qr. 2 na.—4639 E. Fl. 0 q. 3 na.

54. Take 15 ℔. 9 oz. 18 pwt. 23 gr. from 16 ℔. 7 oz.

55. Take 29 ℔. 11 ℥. 7 ʒ. 2 ℈. 19 gr. from 30 ℔.

56. Take 18 cwt. 3 qr. 26 lb. 14 oz. 9 dr. from 14 T.

*57. Take 1 L. 2 m. 7 fur. 36 rd. 5 yd. 2 ft. 1 in. 1 b. c. from 2 L. 2 b. c.

*58 Take 179 yd. 3 qr. 2 na. 2 in. from 186 yd. 2 qr.

*59. Subtract 164 sq. m. 590 A. 3 R. 37 P. 28 sq. yd. 8 sq. ft. 136 sq. in. from 200 sq. m.

60. Subtract 179 cord. 117 C. ft. 1713 C. in. from 2079 cord. 17 C. in.

61. Take 79 T. 1 Pi. 1 hhd. 60 gal. 3 qt. 1 pt. 3 gi. from 180 T. 1 P. 1 hhd.

62. Subtract (Ale Measure) 78 hhd. 50 gal. 2 qt. 1 pt. from 2009 hhd. 1 qt.

63. Take 7000 ch. 18 bu. 2 pk. 6 qt. 1 pt. from 8804 ch.

64. Subtract 7 yr. 7 mo. 3 wk. 6 da. 15 hr. from 80 yr.

65. Take 3 yr. 3 mo. 3 wk. 3 da. 3 hr. from a century.

66. Take 6 hr. 16 min. 43 sec. from a day of 24 hours.

67. Take 8 S. 15 deg. 45 min. 37 sec. from 1 Cir. 3 S. 16 deg. 27 min. 37 sec.

68. Subtract 6 T. 6 cwt. 6 dr. from 17 T. 4 dr.

69. From 176 lb., Troy, take 6 grains.

70. Subtract one dram from a ton.

71. What is the difference between an oz. and a cwt.?

72. If you had an oz. of silver; how much more must you get to have a pound?

73. How much heavier is a cwt. than a pound?

MULTIPLICATION OF COMPOUND NUMBERS.

Write the numbers expressing the several denominations, and write the multiplier under the lowest denomination.

Multiply the number expressing the lowest denomination, and divide this product by the number which is required of that denomination to make one of the next higher; write the remainder under the denomination multiplied, and carry the quotient to the product of the next denomination. Thus proceed.

1. $678,045 × 5
2. 809,073 × 7
3. 674,821 × 6
4. 304,205 × 8
5. 693,206 × 12
6. 704,312 × 6
7. $842,600 × 2
8. 639,405 × 3
9. 780,093 × 11
10. 804,209 × 12
11. 316,799 × 11
12. 642,803 × 12

	£.	s.	d.		
13.	177	16	7	×	4
14.	184	7	9	×	5
15.	297	19	8	×	11
16.	304	15	11	×	12
17.	47	18	7½	×	7
18.	64	17	6	×	6
19.	37	12	8	×	5
20.	154	0	11	×	44
21.	999	19	11	×	42
22.	604	0	8	×	72
23.	197	8	7	×	63

	£	s.	d.		
24.	704	17	6	×	97
25.	697	14	10	×	104
26.	184	17	1¼	×	57
27.	673	18	4¾	×	73
28.	785	19	9½	×	109
29.	643	10	10½	×	53
30.	797	7	7	×	81
31.	603	8	9	×	79
32.	602	12	8	×	45
33.	784	10	6¾	×	111
34.	979	1	3	×	101

35. Multiply 179 lb. 11 oz. 19 pwt. 23 gr. by 11.

36. Multiply 674 lb. 7 oz. 0 pwt. 4 gr. by 7.

37. Multiply 47 ℔. 8 ℥. 3 ʒ. 3 ℈. 14 gr. by 12.

38. Multiply 63 ℔. 7 ℥. 3 ʒ. 2 ℈. 2 gr. by 8.

39. Multiply 175 T. 18 cwt. 3 qr. 26 lb. 13 oz. 11 dr. by 174.
40. Multiply 607 T. 14 cwt. 2 qr. 0 lb. 2 oz. 7 dr. by 8.
*41 Multiply 13 L. 2 m. 3 rd. 5 yd. 2 ft. 6 in. by 11.
*42. Multiply 175 L. 1 m. 2 ft. 11 in. by 289.
43. Multiply 607 yd. 3 qr. 3 na. by 7.
44. Multiply 79707 E. Fl. 2 qr. 2 na. by 10001.
45. Multiply 89604 E. Fr. 4 qr. 3 na. by 70707.
46. Multiply 69064 E. E. 3 qr. 1 na. by 60006.
*47. Multiply 75 sq. m. 638 A. 3 R. 30 P. 27 sq. yd. 8 sq. ft. 9 sq. in. by 108.
48. Multiply 797 cord, 123 C. ft. 1709 C. in. by 609.
49. Multiply 603 C. yd. 14 C. ft. 1697 C. in. by 84.
50. Multiply 1 Pi. 1 hhd. 60 gal. 3 qt. 1 pt. 3 gi. by 9.
51. Multiply 397 ch. 28 bu. 2 pk. 7 qt. 1 pt. by 12.
52. Multiply 16 yr. 300 da. 12 hr. 37 min. 43 sec. by 8.
53. Multiply 3 S. 16 deg. 36 min. 12 sec. by 3.
54. Take 7 cwt. 7 lb. 7 dr. 7 times.
55. Multiply 6 ℔. 6 ℥. 6 ʒ. 1 ℈. 16 gr. by 14.
56. Multiply 7 yd. 1 na. by 198.
57. Multiply 1 T. 1 cwt. 1 qr. 1 lb. 1 oz. 1 dr. by 111.

DIVISION OF COMPOUND NUMBERS.

Write the numbers expressing the several denominations of the dividend, and write the divisor to the left of it.

Divide the highest denomination; write the quotient, which will be of the same denomination; reduce the remainder to the next lower denomination, and divide their sum.

1. $678[illegible]2 ÷ 2
2. 5420,79 ÷ 3
3. 8405,62 ÷ 4
4. 9326,39 ÷ 5
5. 8467,02 ÷ 6
6. 7342,56 ÷ 7
7. 8462,31 ÷ 8
8. 9675,42 ÷ 9
9. 7654,22 ÷ 10
10. 8243,01 ÷ 11
11. $7024,25 ÷ 12
12. 8246,07 ÷ 2
13. 6097,34 ÷ 3
14. 7248,53 ÷ 4
15. 8095,04 ÷ 5
16. 9643,21 ÷ 6
17. 6437,85 ÷ 5
18. 7006,39 ÷ 9
19. 8405,67 ÷ 10
20. 6432,54 ÷ 11

	£	s.	d.		
21.	17	6	3	÷	5
22.	1704	7	8¼	÷	4
23.	9604	17	7¾	÷	5
24.	6975	10	8½	÷	6
25.	189	15	7½	÷	7
26.	684	13	8	÷	8
27.	909	10	11	÷	9
28.	1704	15	5	÷	45
29.	6073	11	9	÷	72
30.	7045	10	1	÷	43
31.	1078	11	7¼	÷	93
32.	1094	1	1	÷	23
33.	6073	18	7	÷	22
34.	7040	0	0	÷	39
35.	1832	0	0	÷	74
36.	3800	0	0¾	÷	31
37.	8080	8	8¼	÷	63
38.	6676	6	6¾	÷	37
39.	5047	1	1¾	÷	26
40.	6043	2	6	÷	29

41. Divide 77 lb. 11 oz. 19 pwt. 23 gr. by 6.
42. Divide 63 lb. 8 oz. 14 pwt. 17 gr. by 23.
43. Divide 187 T. 7 cwt. 2 qr. 20 lb. 12 oz. 1 dr. by 9.
44. Divide 607 T. 0 cwt. 0 qr. 15 lb. 6 oz. 15 dr. by 709.
45. Divide 785 ℔. 8 ℥. 7 ʒ. 2 ℈. 12 gr. by 12.
46. Divide 5697 ℔. 7 ℥. 3 ʒ. 0 ℈. 13 gr. by 9.
*47. Divide 79 L. 2 m. 5 fur. 32 rd. 4 yd. 2 ft. by 5.
*48. Divide 68 L. 1 m. 4 fur. 17 rd. 3 yd. 1 ft. by 17.
49. Divide 1709 yd. 3 qr. 2 na. by 7.
*50. Divide 6078 E. Fl. 0 qr. 2 na. 1 in. by 109.
*51. Divide 7634 E. E. 1 qr. 9 na. 0 in. by 76[illegible]
*52. Divide 6853 E. Fr. 5 qr. 1 na. 2 in. by [illegible].
*53. Divide 600 A. 3 R. 30 P. 30 sq. yd. 3 sq. ft. by 4.
54. Divide 2034 cord. 106 C. ft. 600 C. in. by 3009.
55. Divide 1 Pi. 1 hhd. 6 gal. 3 qt. 1 pt. 1 gi. by 11.
56. Divide 8654 ch. 27 bu. 3 pk. 6 qt. 1 pt. by 12.
57. Divide 365 yr. 284 da. 17 hr. 35 min. 17 sec. by 187.
58. Divide 897 yr. 87 da. 0 hr. 1 min. 1 sec. by 219.
59. Divide 360 deg. 17 min. 18 sec. by 184.
60. Divide 1 Cir. 7 S. 15 deg. 28 min. 47 sec. by 8.
*61. Divide 6 m. 7 fur. 3 yd. 2 ft. 8 in. [illegible] b. c. by 7.
62. Divide 1 yr. 1 mo. 1 w. 1 d. 1 hr. 1 m. by 10.
63. Divide the number of years in a century by 200.
64. Divide 7 ℔. 8 ℥. 1 ʒ. 1 ℈. 7 gr. by 149.
65. Divide 6 A. 3 R. 30 P. by 60.
66. Divide the number of cubic feet in a cord by 145.6
67. If a year was divided into 764 equal parts; what would be the length of one part?
68. How many hours, &c., are there in the 379th part of a year and four hours?

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